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TEXTILE WORLD

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The July Issue will contain the Directory of the Textile Establishments in the Southern and Western States, illustrated by specially engraved Maps showing the location of the cities and towns where there are textile mills. See page 21.

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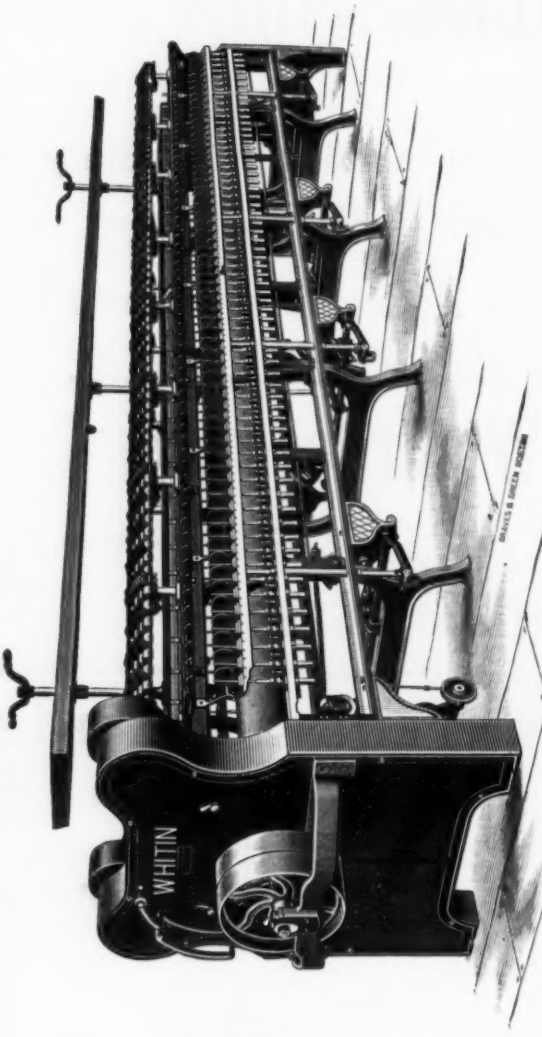

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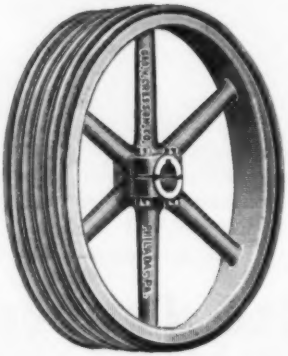

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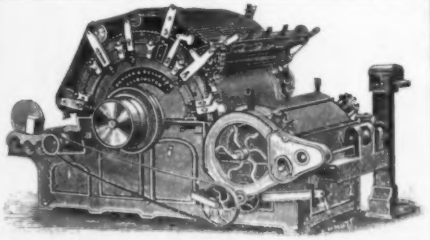

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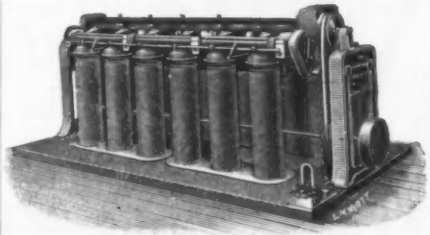

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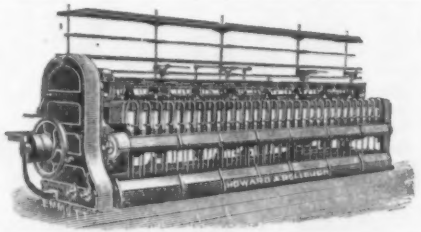

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List of Textile Patents Issued May, 1895.

Specifications and drawings furnished for fifteen cents each. In ordering specifications give both name and number. Address "Patents," P. O. Box 222, Brooklyn, N. Y.

Calendering Textile Fabrics. 539,416. E. Claviez, Chemnitz, Germany.

Cap Spinning Frame. 539,561. A. Whitaker, Providence, R. I.

Carding Engine. 539,691. S. Lebe and J. Haley, Cleckheaton, England.

Carpet Loom Shuttle. 538,883. W. H. Kynett, Battle Creek, Michigan.

Circular Knitting Machine. 540,151. B. M. Denney, Camden, N. J.

Cloth Sponging and Shrinking Machine. 539,938. J. Feiss, Cleveland, Ohio.

Comb For Fibre Feeding Machines. 539,541. J. C. Potter, Pawtucket, R. I.

Cotton Elevator and Distributor. 539,325. F. Zedler and P. L. Ward, Cuero, Tex.

Cotton Gin and Wool Burrer. 539,743. S. L. Johnson, Boston.

Dyeing Apparatus. 539,409. F. Blum, New York City.

Fabrics, Manufacturing of Figured. 538,863. F. Boyer, Paris, France.

Fibre Preparing Machine. 538,754. J. C. Todd, Paterson, N. J.

Fibre Preparing Machine. 539,262. C. A. Green, Jacksonville, Fla.

Griff For Jacquard Mechanism. 539,753. B. H. Gledhill, Philadelphia, Pa., assignor to C. H. Masland & Sons, same place.

Knitting Loom. 538,653. J. Bradley, Chelmsford, Mass.

Knitting Machine 539,649. R. W. Scott, Philadelphia.

Knitting Machine. 539,819. F. A. Nye, Philadelphia, assignor to Nye & Tredick, same place.

Knitting Machine. 539,837. A. Townsend, Philadelphia, assignment as above.

Knitting Machine Take-up Device. 538,834. L. Jones, Jr., Philadelphia.

Knitting Machine Thread Supplying device. 539,791. J. C. Brewin, Philadelphia.

Knitting Machine Tuck Mechanism. 538,652. J. Bradley, Chelmsford, Mass.

Knitting Riding Breeches. 538,767. M. Clauss, Hohenstein-Ernstthal, Germany.

Loom For Weaving Double Fabric for plush. 539,179. H. J. Hope, Sanford, Me.

Loom Shedding Mechanism. 539,693. T. Lynn, Norristown, Pa.

Loom Shedding Mechanism. 539,278. A. Lockwood, Halifax, England.

Loom Shuttle. 538,238. J. C. Sergeson, Philadelphia.

Loom Shuttle. 538,977. J. H. Northrop, Hopedale, Mass., assignor to Geo. Draper & Sons, same place.

Loom Temple. 539,184. R. P. Pearson, Glen Riddle, Pa., assignor to Dutcher Loom Temple Co., Hopedale, Mass.

Loom Temple. {539,241. {540,032. E. C. Stimpson, Hopedale, Mass., assigned as above.

Loom Warp Beams, Brake For. 538,722. A. Biedermann, Augsburg, Germany.

Power Loom Loose Reed Motion. 11,493. Wm. McMichael, Woonsocket, R. I.

Spindle Bearing. 538,995. A. Wood, Worcester, Mass., assignor to Geo. Draper & Sons, Hopedale, Mass.

Spinning Jenny Flier. 539,473. T. Finigan, Paterson, N. J.

Spinning Machine Separator. 540,198. C. A. Taft, Whitinsville, Mass., assignor to Whitin Machine Co., same place.

Spinning Machine Separator. 539,148. W. E. Sharples, Fall River, Mass.

Spinning and Twisting Machine Separator. 539,613. G. O. Draper, Hopedale, Mass.

Stop Motion For Spinning Machine. 539,869. C. B. Holland and J. Fraser, Aberdeen, Scotland.

Twist Lace Machine. 539,936. E. Cope, Nottingham, England.

—The M. A. Furbush & Son Machine Co., of Philadelphia, has just issued a new illustrated catalogue numbered F, which manufacturers will find of decided interest. Among the machines fully described are pickers, cards of all sorts, Biamire lap machines, knickerbocker card attachments, ring doffer vibrators, doffer combs, fillet winders, card stretchers, twisters, teasel gigs, warp dressers, beamers, creels, looms, etc. Every possible particular regarding the machinery is appended. For instance, on wool pickers, the pound capacity a day is given, the dimensions of pulley, revolutions a minute, horse power, floor space and weight, on all sizes. No less than forty-five directions are given for ordering rubbing motions for condenser cards. Taken altogether, the catalogue is remarkable for its completeness. It should be at every woolen manufacturer's elbow.

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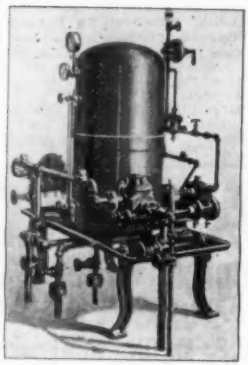

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Advertisers whose names do not appear under desired he adings will please notify the publishers. Such omissions are accidental, not intentional.

Alphabetical Index to Advertisements follows this Classified List.

Architects and Mill Engineers.

Berlin Iron Bridge Co, The, East Berlin, Ct.
Ferguson, John W, Patterson, N. J.
Gray, Arthur F, 53 State St, Boston.

Automatic Boiler Feeds.

D'Este & Seeley Co, 29 Haverhill St, Boston.

Balling Machine.

Torrance Mfg. Co, 18 Davis St, E. Newark, N. J.

Baskets, Raw Hide, etc.

Barlow, John W, Lawrence, Mass.

Belting.

Alexander Bros., 410 No. 3d St., Phila., Pa.
Danforth Belting Co, 221 Chestnut St, Phila, Pa.
Fell, Geo & Son, Bolton, England.
Rhoads, J E, & Sons, 239 Market St, Phila, Pa.
See also Mill Supplies.

Belt Dressing.

Alexander Bros, 410 No. 3d St, Phila, Pa.
Danforth Belting Co, 221 Chestnut St, Philadelphia, Pa.
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Southwick, Geo. W, & Co, Stamford, Ct.

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Small Bros, Fall River, Mass.

Bobbins, Spools, Shuttles, Etc.

Vermont Spool & Bobbin Co, Burlington, Vt.

Boiler and Pipe Covering.

Keasby & Mattison Co, The, Ambler, Pa.
New York Fire Proof Covering Co, 128 Liberty St, N. Y.

Boiler Compounds.

Imperial Chemical Co, 432 Market St, Phila, Pa.
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Boxes, Paper.

Palmer, J. S, 35 Wistar St, Germantown, Pa

Boxes, Wooden.

Pearson, J. T, Kensington, Pa.

Burr Pickers.

Atlas Mfg. Co., Newark, N. J.

Card Clothing.

American Card Clothing Co, Worcester, Mass.
Radcy, Cunningham & Co, Phila, Pa.
Scott, Jas., Philadelphia, Pa.

Card Cutters.

Hand, Fredk, & Co, 159 Van Houten St, Paterson, N. J.

Card Feeds.

Atlas Mfg. Co , Newark, N. J.
Bates, E. V, Dracut, Mass.
Harwood, Geo. S, & Son, 7 Water St, Boston.

Calico Printers' Machinery and Supplies.

Hope, John, & Sons, Eng. Mfg. Co, Elmwood, Providence, R. I.
New Bedford Copper Co, New Bedford, Mass.
See also Dyeing, Bleaching Machinery, etc.

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Altemus, W. W, & Son, 2816 N. 4th St, Phila, Pa.
Crompton Loom Works, Worcester, Mass.
Furbush, M. A, & Son, Machine Co, Phila, Pa.

Chemical Laboratory.

Genth, F. A.

Chinchilla Machines.

Bausch, C. H, & Sons, Holyoke, Mass.

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Ingham, John, & Co, Jamestown, N. Y.

Combs, Hackles, Pins, Etc.

Townsend, Thos, Manchester, Conn.

Cone Tubes.

McCausland, J, Providence, R. I.

Cone Winders.

Foster Machine Co, Westfield, Mass.

Copper Print Rollers.

New Bedford Copper Co, New Bedford, Mass.

Copper Work for Dyers.

Brabender, Chas, & Son, Paterson, N. J.
Oat, Jos. & Sons, 232 Quarry St, Phila, Pa.

Cotton.

Barry, Thayer & Co, 32 India St, Boston, Mass.
Blaisdell, S, Jr, Co, Chicopee, Mass.
Capelle, Herman, cor. Leonard St. and W. Broadway, N. Y.
Nimocks, R. M, Fayetteville, N. C.

Cotton Machinery.

Atherton Machine Co, Lowell, Mass.
Altemus, W. W, & Son, 2816 N. 4th St, Phila, Pa.
Draper, Geo, & Sons, Hopedale, Mass.
Easton & Burnham, Pawtucket, R. I.
Howard & Bullough American Machine Co, Pawtucket, R. I.
Kilburn, Lincoln & Co, Fall River, Mass.
Mason Machine Wks, Taunton, Mass.
Pettee Machine Wks, Newton Upper Falls, Mass.
Saco Water Power Machine Shop, Biddeford, Me.
Providence Machine Co, Providence, R. I.
Whitin Machine Wks, Whitinsville, Mass.

Cotton Openers and Lappers.

Atherton Machine Co, Lowell, Mass.
Howard & Bullough American Machine Co, Pawtucket, R. I.

Damper Regulators.

D'Este & Seeley Co. (Curtis), 29 Haverhill St, Boston, Mass.
Locke Regulator Co, Salem, Mass.

Designers.

Designer, Box 222, Brooklyn, N. Y.
Hand, Fredk, & Co, 159 Van Houten St, Paterson, N. J.
Woolens, Box 719, Middleboro, Mass.

Dryers.

Philadelphia Textile Machinery Co, Philadelphia, Pa.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Dusters.

See Wool and Waste Dusters.

Dyeing, Bleaching and Finishing.

Barretts, Palmer & Heal, 34 Canal St, N. Y.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Greenwood, R. & Bault, Frankford, Pa.
Home Bleach & Dye Works, Pawtucket and Valley Falls, R. I.
Kensington Dye Works, Kensington, Pa.
Perseverance Dyeing Co, Woonsocket, R. I.
Philadelphia Turkey Red Dye Works, Putnam St, Phila.
Providence Dye Works, Kensington, Pa.

Dyeing, Drying, Bleaching and Finishing Machinery.

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Butterworth, H. W, & Sons Co, Phila, Pa.
Delahunty Dyeing Machine Co, 152 N. Front St, Phila, Pa.
Dill Spool Support Co, Hancock St. and Lehigh Ave, Phila, Pa.
Granger Foundry & Machine Co, Providence, R. I.
Lincoln & Co, 54 Arch St, Hartford, Ct.
Parks & Woolson Machine Co, Springfield, Vt.
Phenix Iron Foundry, Providence, R. I.
Sprowles & Houseman, Frankford, Phila.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass. (Drying.)
Walker, R. J, 2335 Hamilton St, Phila.

Dyestuffs and Chemicals.

Atteaux, F. E, & Co, 172 Purchase St, Boston, Mass.
Avery Lactart Co, 169 Devonshire St, Boston, Mass.
Baltimore Chemical Co, 7th and Gough Sts, Baltimore.
Beach & Co, Hartford, Ct.
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Browning & Bros, 42 N. Front St, Phila, Pa.
Bullock & Crenshaw, 528 Arch St, Phila, Pa.
Corey, S. J, 273 Congress St, Boston.
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Farbenfabriken of Elberfeld Co, 77 William St, N. Y.
Gilbert Bros. & Co, 202 Purchase St, Boston.
Hanna, W. W, 52 N. Front St, Phila, Pa.
Harway Dyewood & Extract Mfg. Co, 184 Front St, N. Y.
Hill, Edward's, Son & Co, 25 Cedar St, N. Y.
Holliday, Read & Sons, Ltd, 7 Platt St, N. Y.
Horsfall, Jonathan, 216 Chestnut St, Phila, Pa.
Howe & French, 107 Milk St, Boston, Mass.
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Janney, O. S, & Co, Phila. and Boston.
Johnson, Chas. A, & Co, 14 Dey St, N. Y.
Karcher, Ph. H, & Co, 14 Cedar St, N. Y.
Keller, John J, & Co, 104-106 Murray St, N. Y.
King, L. C, & Co, 171 Front St, New York City.
Klipstein, A, & Co, 122 Pearl St, N. Y.
Matheson, W. J, & Co, 178 Front St, N. Y.
Mende, A. P. Co, 14 Water St, N. Y.
Merrimack Chemical Co, 13 Pearl St, Boston, Mass.
Nashoba Company, Ayer, Mass.
Naumkeag Dye Co, Salem, Mass.
Phillips, Moro Chemical Co, 131 S. 3d St, Phila., Pa.
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Rice, Chas. F. & Co, 184 Summer St, Boston.
Schulze-Berge & Koechl, 79 Murray St, N. Y.
Sharpless, John M, & Co, 22 N. Front St, Phila, Pa.
Stamford Mfg. Co, 157 Maiden Lane, N. Y.
Sykes & Street, 85 Water St, N. Y.
Welch, Holme & Clark Co, 383 West St, N. Y

Dyers and Finishers.

Boston Finishing Works, Williamstown Mass.
Greenwood, R, & Bault, Frankford, Pa.
Harras, E, 666 E. 152 St, N. Y.
Home Bleach & Dye Works, Pawtucket, R. I.
Kensington Dye Works, Kensington, Pa.
Mason, The R. D, Co, Pawtucket, R. I.
Oakdale Dye Works, 913 W. York St, Phila, Pa.
Pawtucket Dyeing & Bleaching Co, Pawtucket, R. I.
Perseverance Dyeing Co, Woonsocket, R. I.
Providence Dye Wks, Kensington, Pa.

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Cohoes Foundry & Machine Co, Cohoes, N.Y.
Graves Elevator Co, Rochester, N. Y.
McCalvey Elevator Works, 602 Cherry St, Phila, Pa.
Salem Foundry & Machine Shop, Salem, Mass.

Engineers, Electrical.

General Electric Co, Schenectady, N. Y. Offices in all large cities.

Engineers, Mechanical.

Ferguson, John W, Paterson, N. J.
Jarvis Engineering Co, Oliver St, Boston, Mass.
Rockwell. W. S, & Co, 26 Cortland St, N. Y.

Engravers for Fabric Printers.

Hope, John & Sons, Eng. & Mfg. Co, Elmwood, Providence, R. I.

Engraving on Wood.

Blanchard & Watts Eng. Co, 36 Columbus Ave, Boston.
Russell, Albert C, 38 Pearl St, Boston, Mass.
Ryder Co, J. J, 210 Westminster St, Providence, R. I.

Express Money Orders and Travelers' Cheques.

American Express Co, offices in every city

Factory Sites.

Bartholomew, J. B, Topeka, Kas.
Chattanooga Chamber of Commerce, Chattanooga, Tenn.
Coahuila & Durango Imp. Co., Mills Bldg., N. Y.
Dolge, Alfred, Dolgeville, N. Y.
Elmira, N. Y.
Northern Pacific R. R., St. Paul, Minn.
Walker, John Stewart, Lynchburg, Va.

Feed Water Heaters.

Hine & Robertson Co, 67 Courtlandt St, N. Y.
Jarvis Engineering Co, Oliver St, Boston, Mass.
Whitlock Coil Pipe Co, 67 South St, Elmwood, Conn.

Feed Water Pumps.

Phœnix Iron Foundry, Providence, R. I.

Finishing Machinery.

See Dyeing, Drying, Bleaching and Finishing.

Fire Hose.

Rhoads, J. E, & Son, 239 Market St, Philadelphia, Pa.

Fire Pails.

Lincoln, Levi, Worcester, Mass.

Fluted Rolls.

Cohoes Foundry & Machine Co, Cohoes, N.Y
Thurston, A. G, & Son, Box 528, Fall River. Mass.

Flier Pressers.

Thurston, A. G, & Son, Box 528, Fall River, Mass.

Gas Singeing Machines.

Rockwell, W. S, & Co, 26 Cortland St., N. Y.

Gear Cutting Machine.

Blaisdell, P, & Co, Worcester, Mass.
Whiton, The D. E, Co, New London, Conn.

Gears.
Bowsher, N P, So. Bend, Ind.
New Process Raw Hide Co, Syracuse, N. Y.

Heating.
See Ventilating.

Hosiery Boards.
Pearson, J. T, Kensington, Pa.

Index.
Burr Index Co, 336 Asylum St, Hartford, Conn.

Indicators for Engines.
Hine & Robertson Co, 67 Courtlandt St, N. Y.

Jute Goods, Burlaps and Jute Yarns.
Wilmington Mills Mfg. Co, Wilmington, Del.

Knit Goods Brushers.
Franz & Pope Knitting Machine Co, Bucyrus, O.
Jones, Lewis, Bristol, Pa.

Knit Goods Edgings, Trimmings, etc.
Cheney Bros, Silk Goods, 479 Broome St, N. Y.
Fleming & Chapin, 215 Church St, Phila.
Friedberger, C, Edgings, Germantown, Phila, Pa.
Hepner & Howitz, Lacings, 84 Leonard St, N. Y.
Krout & Fite Mfg. Co, 2632 Mascher St, Phila.

Knit Goods Finishing Machines, Crochet, Etc.
Champion Sewing Machine Co, 1819 N. 5th St, Phila, Pa.
Merrow Machine Co, The, Hartford, Conn.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 6th and Arch Sts, Phila, Pa.

Knit Goods Ravellers.
Traver, A. L. Mellenville, N. Y.

Knitting Machine Cylinders.
Ashman, Stephen A, 3 Fetter Lane, Phila, Pa.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Stafford, W, & Co, Little Falls, N. Y.
Stanton & Lewis, 318 Branch St, Phila, Pa.

Knitting Machinery.
Branson Machine Co, 506 St. John St, Phila, Pa.
Brinton, H, & Co, 213 Race St, Phila, Pa.
Campbell & Clute, Cohoes, N. Y.
Champion Sewing Machine Co, 1819 N Fifth St, Phila, Pa.
Cooper, Charles, Bennington, Vt.
Crane Mfg. Co, Lakeport, N. H.
Franz & Pope Knitting Machine Co, Bucyrus, O.
Henworth & Co, Lehigh Ave. and Mascher St, Phila, Pa.
Jones, Lewis, Bristol, Pa.
Keystone Knitting Machine Mfg. Co, 1716 No. Fifth St, Phila, Pa.
Lamb Mfg. Co, Chicopee Falls, Mass.
Leighton Machine Co, Manchester, N. H.
Mayo Knitting Machine Co, Franklin, N. H.
National Automatic Knitter Co, 728 Cherry St, Phila, Pa.
Novelty Knitting Machine Co, Lowell, Ms.
Nye & Tredick, 606 Arch St, Phila, Pa.
Paxton & O'Neill, 129 Bread St, Phila, Pa.
Payne, Geo. W, & Co, Pawtucket, R. I. (Winding and spooling.)
Pepper Mfg. Co, Lakeport, N. H.
Scott & Williams, 6th and Arch Sts, Phila, Pa.
Stafford, W, & Co, Little Falls, N. Y.
Standard Machine Co., 508 Minor St., Philadelphia, Pa.
Taylor, James, 835 Arch St, Phila, Pa.

Knitting Needles.
Ames, David J, Philmont, N. Y.
Breedon, Wm, & Son, Amsterdam, N. Y.
Cooper, Charles, Bennington, Vt.
Corey, Wm, Co, Manchester, N. H.
Ives, Loyal T, New Brunswick, N. J.
Lydall, H, & Foulds, Manchester, N. H.
Star Needle Co, New Britain, Conn.
Treat, Orion, Manchester Green, Conn.
Wardwell Needle Co, Lakeport, N. H.

Laboratory Outfits.
Bullock & Crenshaw, 528 Arch St, Phila, Pa.

Lace Leather.
Rhoads, J. E, & Son, 239 Market St, Phila, Pa.
Southwick, G. W, & Co, Stamford, Ct.

Looms.
Crompton Loom Works, Worcester, Mass.
Draper, Geo. & Sons, Hopedale, Mass.
Furbush, M. A, & Son Co, Phila, Pa.
Gilbert Loom Co, Worcester, Mass.
Insinger & Co, 15 E. Canal St, Phila, Pa.
Kilburn, Lincoln & Co, Fall River, Mass.
Mason Machine Works, Taunton, Mass.
Whitin Machine Works, Whitinsville, Ms

Loom Picker Manufacturers.
Barlow, John W, Spicket Mill, Lawrence Mass.
Loom Picker Co, Biddeford, Me.

Lubricators
Dixon, Jos, Crucible Co, Jersey City, N. J.
Faul, W. J, 120 Liberty St, N. Y.

Lumpers.
Gerry, George, & Son, Athol, Mass.

Machinery Dealers.
Clark, Jeremiah, Lowell, Mass.
Schofield, Geo. L, 123 N. Front St, Phila, Pa.
Scott, Jas., Philadelphia, Pa.

Machinery Wipers.
Am. Silk Mfg. Co, 311 Walnut St, Phila, Pa.

Machinists' Tools.
Blaisdell, P, & Co, Worcester, Mass.
Whiton, The D. E. Co, New London, Conn.

Measuring and Folding Machines.
Elliott & Hall, 54½ Harmon St, Worcester Mass.

Mails.
Walder, J, Paterson, N. J.

Mechanical Engineers.
Berlin Iron Bridge Co, The, East Berlin, Ct.

Mill Builders and Engineers.
Berlin Iron Bridge Co, The, East Berlin, Ct.
Ferguson, John W, Paterson, N. J.
Gray, Arthur F, Exchange Bldg, Boston.

Mill Cogs.
Bowsher, N. P, So. Bend, Ind.

Mill Supplies.
American Supply Co, Providence, R. I.
Buckley's, Benj. Son, Gun Mill, Paterson, N. J.
Covel & Osborn, Fall River, Mass.
Hill, Jas, Mfg. Co, Providence, R. I.
Thurston, A. G, & Son, Fall River, Mass.

Napping Machines.
American Napping Machine Co, Williamstown, Mass.
Parks & Woolson Machine Co, Springfield, Vt.

Oilless Bearings.
N. American Metalline Co, 62 W. Ave. and 3rd St, Long Island City, N. Y.

Pantagraphs, Engraving Machinery, Etc.
Hope, John, & Sons Eng. & Mfg. Co, Elmwood, Providence, R. I.

Paper Tubes for Cone Winders.
McCausland, J, 33 Canal St, Providence, R.I.

Patent Solicitors.
Crosby & Gregory, 34 School St, Boston Mass.
Crossley, Arthur W, Exchange Bldg, Boston, Mass.
Gooch, Chas. J, Washington, D.C.
Miller, Jos. A, & Co, Butler Exchange, Providence, R. I.
Planta, E, 27 School St, Boston, Mass.
Weaver, E. C. 900 F St, Washington, D. C.
Wright, Brown & Quinby, Exchange, Bldg, Boston, Mass.

Pattern Cutter.

Gleason, A. H, Rockbottom, Mass.

Penstocks.

Dalrymple, Geo, Fair Haven, Vt.

Pianos and Organs.

Beethoven Piano-Organ Co, Washington, N. J.

Pneumatic Conveying.

See Ventilating.

Power Transmitting Machinery.

Cresson, Geo. V, Co, 1800 Allegheny Ave, Phila, Pa.
General Electric Co, Schenectady, N. Y. Offices in all large cities.
Jarvis Engineering Co, Oliver St, Boston, Mass.
Kilburn, Lincoln & Co, Fall River, Mass.
Watson, A, 2136 Dickerson St, Phila, Pa.

Presses.

Crawford, J. J, & Son, Nashua, N. H.
Taylor, James, 835 Arch St, Phila, Pa.

Pressure Regulators for Steam and Water.

D'Este & Seeley Co. (Curtis) 29 Haverhill St, Boston, Mass.
Locke Regulator Co, Salem Mass.

Ramie Fibre.

Ramie Fibre Co, 120 N. 7th St, Phila, Pa.

Reed and Harness Manufacturers.

American Supply Co, Providence, R. I.
Gowdey. J. A, & Son, Providence, R. I.
Huston, Wm, 46 Clifford St, Providence, R. I.
Loom Picker Co, Biddeford, Me.
Walder, J, Paterson, N. J.

Ribbons.

Cheney Bros, S. Manchester, Ct.
Friedberger, C, Germantown, Pa.

Roll Coverers.

Barlow, John W (worsted rolls), Lawrence Mass.

Roller Skins.

Fell, Geo, & Son, Bolton, England.
Gerrish Wool & Leather Co, Manchester, N. H.

Roofing, Steel and Tin.

Chattanooga Steel Roofing Co, Chattanooga, Tenn.

Roofing Tin.

Merchant & Co, Philadelphia.

Roving Cans and Sheet Metal Work for Mills.

Hill, Jas, Mfg. Co, Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Rubbing Motion for Wool Cards.

Beswick & Kay, 25th and Callowhill Sts. Philadelphia.

Sample Cards.

Merchants Sample Card Co, 81 Crosby St, N. Y.

Scales.

Troemner, Henry, 710 Market St, Phila, Pa.

Separators.

D'Este & Seeley Co. (Curtis) 29 Haverhill St, Boston, Mass. (steam and grease).

Sewing Machines and Supplies.

Champion Sewing Machine Co, 1819 N. 5th St, Phila, Pa
Frame, Gibbons, 2nd and Diamond Sts, Phila, Pa.
Nye & Tredick, 606 Arch St, Phila, Pa.
Scott & Williams, 6th and Arch Sts, Phila, Pa.

Sewing Machine Repairs.

Busch & Linn, 120 N. 7th St, Phila, Pa.

Shearing Machinery.

See Dyeing, Drying, Bleaching and Finishing.

Shell Rolls.

Cohoes Foundry & Mach. Co, Cohoes, N. Y.
Thurston, A. G, & Son, Box 528, Fall River, Mass.

Silk Goods.

Haskell Silk Co, Westbrook, Me, and 47 Worth St, N. Y.
Natchaug Silk Co, The, Willimantic, Ct.

Singe Plates.

New Bedford Copper Co, New Bedford, Ms.

Soaps.

Allison Bros, Middletown, Ct.
American Soap & Washolene Co, Cohoes, N. Y.
Camden & Phila. Soap Co, Camden, N. J.
Draper, J. O, & Co, Pawtucket, R. I.

Spindles.

Buckley, Benj's, Sons, Gun Mill, Paterson, N. J.
Draper, Geo, & Sons, Hopedale, Mass.
Easton & Burnham, Pawtucket, R. I.
Providence Machine Co, Providence, R.I.
Whitin Machine Wks, Whitinsville, Mass.

Spinning Cylinders.

Hill, Jas. Mfg. Co, Providence, R. I.
N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Spinning Frames.

See Cotton Machinery.

Spinning Rings.

Draper, Geo, & Sons, Hopedale, Mass.
Whitinsville Spinning Ring Co, Whitinsville, Mass.

Spinning Tubes.

Buckley, Benj's. Son, Gun Mill, Paterson, N. J.
Providence Machine Co, Providence, R. I.

Spooling Machinery.

Easton & Burnham, Pawtucket, R. I.
Payne, Geo. W, & Co, Pawtucket, R. I.

Steam Boilers.

Frick Company, Waynesboro, Pa.
Jarvis Engineering Co, Oliver St, Boston, Mass.
Sargent, J. Bradford, 8 Oliver St, Boston.
Whitehill-Corliss & Pictet Ice Machine Co, Newburgh, N. Y.

Steam Boiler and Pipe Covering.

Keasbey & Mattison Co, Ambler, Pa.
N. Y. Fire Proof Covering Co, 128 Liberty St, N. Y.

Steam Boiler Insurance.

Hartford Steam Boiler Inspection & Insurance Co, Hartford, Conn.

Steam Damper Regulators.

D'Este & Seeley Co, 29 Haverill St, Boston Mass.
Locke Regulator Co, Salem, Mass.

Steam Engines.

Frick Co, Waynesboro, Pa.
Jarvis Engineering Co, Oliver St, Boston, Mass.
Sargent, J. Bradford, 8 Oliver St, Boston, Mass.
Whitehill-Corliss & Pictet Ice Machine Co, Newburgh, N. Y.

Steam Kettles.

Walker & Pratt Mfg. Co, 31-35 Union St. Boston, Mass.

Steam Separators.

D'Este & Seeley Co. (Curtis), 29 Haverill St., Boston.

Steam Specialties.

Hine & Robertson Co, 67 Courtlandt St, N. Y.
Jarvis Engineering Co, Oliver St, Boston, Mass.

Steam Traps.

D'Este & Seeley Co. (Curtis) 29 Haverhill St, Boston, Mass. (return float and expansion).
Locke Regulator Co, Salem, Mass.

Steel Castings.

Chester Steel Castings Co, 407 Liberty St Phila, Pa.

Steel and Iron Roofing.

Chattanooga Steel Roofing Co, Chattanooga, Tenn.

Stop and Speed Limit Attachments for Engines.

Monarch Engine Stop Co, 34 Maiden Lane, N. Y.

Tanks, Tubs and Vats.

American Stave & Cooperage Co, New York and Boston.
Brabender, Chas, & Son, Paterson, N. J.
Burkhardt's, Geo. J., Sons, 2831 N. Broad St, Phila, Pa.
Burkhardt, Wm. H, & Co, 240 Chestnut St, Phila, Pa.
Corcoran, A. J, 11 John St, N. Y.
Hall, Amos H, No. 2nd above Cambria, Phila, Pa.
Oat, Jos, & Sons, 232 Quarry St, Phila, Pa.
Woolford, George, 2240 No. 9th St, Phila, Pa.

Tank Bolt Protector.

Burkhardt, Wm. H, & Co, 240 Chestnut St, Phila, Pa.

Tapes and Braids.

Fleming & Chapin, 215 Church St, Phila, Pa.
Kenyon, John J, Pawtucket, R. I.
Perseverance Mills, 2632-40 Mascher St, Phila, Pa.

Teasels.

Kellogg, Thos. C, Skaneateles, N. Y.
Kellogg, Wm. W, Skaneateles, N. Y.
McLaughlin Bros, Skaneateles Falls, N. Y.

Temperature Regulators.

D'Este & Seeley Co, 29 Haverhill St, Boston.

Tentering Machines.

See Dyeing, Bleaching Machinery, Etc.

Tension Pulleys.

N. E. Ventilating & Heating Co, 930 Manton Ave, Providence, R. I.

Textile Machinery Dealers.

Clark, Jeremiah, Lowell, Mass.
Schofield, George, Phila, Pa.

Travellers, Spinning and Twisting.

Reliance Mfg. Co., New Bedford, Mass.

Valves.

D'Este & Seeley Co, 29 Haverill St, Boston, Mass.
Locke Regulator Co, Salem, Mass.

Ventilating Apparatus.

Berry, A. Hun, 23 W. 1st St, Boston, Mass.
New England Heating & Ventilating Co, Providence, R. I.
Philadelphia Textile Machinery Co, Hancock St, above Lehigh Ave, Phila, Pa.
Sturtevant, B. F. Co, 34 Oliver St, Boston, Mass.

Warp Compressing Machine.

Worcester Warp Compressing Machine Co Worcester, Mass.

Waste, Cotton.

Massasoit Mfg. Co, Fall River, Mass.

Watchman's Clock.

Imhauser, E, 206 Broadway, N. Y.
Nanz & Co, 16 Chambers St, N. Y.
Pneumatic Watchman Check Co, Columbus, O.

Water Wheels.

Burnham Bros, York, Pa.
Christiana Machine Co, Christiana, Pa.
Swain Turbine Mfg. Co, Lowell, Mass.

Water Wheel Governors.

Cohoes Foundry & Machine Co, Cohoes N. Y.
Lombard Water Wheel Governor Co, 61 Hampshire St, Boston.

Winders. (Cone.)

Foster Machine Co, Westfield, Mass.

Winders. (Hosiery.)

Foster Machine Co, Westfield, Mass.
Payne, Geo. W. & Co, Pawtucket, R. I.

Wool.

Grubnau, Carl, 46 No. Front St., Phila
Webb, Chas. J. & Co, 156 N. Front St. Phila, Pa.

Wool Combs.

Townsend, Thos, Manchester, Conn.

Wool Combing Machinery.

Crompton Loom Works, Worcester, Mass.

Wool Extracts.

Daly, Jas. E., & Co., 105 River St., Paterson, N. J.

Wool and Waste Dusters.

Gerry, Geo, & Son, Athol, Mass.
Stillman-Rich Machine Co, Westerly, R. I.

Woolen Machinery.

Altemus, W. W, & Co, 2816 N. 4th St, Phila, Pa.
Atlas Mfg. Co., Newark, N. J.
Easton & Burnham, Pawtucket, R. I.
Furbush, M. A. & Son Machine Co, Phila, Pa.
Gessner, Ernst, 5136 Viola St, Phila, Pa.
Harwood, Geo. S, & Son, 7 Water St, Boston.
Insinger & Co, 15 E. Canal St, Phila, Pa.
Parker, J. B, Machine Co, Clinton, Mass.
Scott, Jas., Philadelphia, Pa.

Wool, Hair and Noils.

Fowles & Co, 102 Church St. Phila.
Grubnau, Carl, 46 No. Front St., Phila.
Lyon, John H, & Co, 10 Reade St, N. Y.
Webb, Chas. J, & Co, 156 N. Front St, Phila, Pa.

Wool Sorters and Scourers.

Duross, Theodore A., Kensington Ave. and Huntingdon St., Phila.
Merrimack Wool Scouring Co., Lawrence, Mass.

Yarns.

Alpaca Yarns.

Hardt, Von Bernuth & Co., 47 Broome St., N. Y.

Carpet Yarns.

Wilmington Mills Mfg. Co, Wilmington, Del.

Cashmere Yarns.

Hardt, Von Bernuth & Co, 47 Broome St, N. Y.

Colored Cotton Yarns.

Dana Warp Co, Biddeford, Me.
Hadley Co, Holyoke, Mass.
Montgomery, J. R. Co, Windsor Locks, Ct.
Sanford Spinning Co, Fall River, Mass.
Sawyer, Manning & Co, 86 and 88 Franklin St, N. Y.
Tucker & Cook Mfg. Co, Conway, Mass.

Cotton Warps and Yarns.

Abegg & Rusch, 92 Grand St, N. Y.
Arkwright, Sir Rich, & Co, Ltd, 69 Mercer St, New York City.
Bale, Stuart & Co, 51 Green St, N. Y.
Blythe, Richard A, 114 Chestnut St, Phila, Pa.
Buckingham & Paulson, 83 Leonard St, New York City.
Chadwick, Jas, & Bro, 241 Chestnut St, Phila, Pa, and Jersey City, N. J.
Clark, Wm, Co, Westerly, R. I.
Dana Warp Co, Biddeford, Me.
Fleming & Chapin, 215 Church St, Phila, Pa.
Germantown Spinning Co, Germantown, Pa.
Globe Yarn Mills, Fall River, Mass.
Grant Yarn Co, Fitchburg, Mass.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Hadley Co, Holyoke, Mass.
Hardt, Von Bernuth & Co, 477 Broome St, New York City.
Hawes, O. S, & Bro, Fall River, Mass.
Howland Mills, New Bedford, Mass.
Kerr Thread Co, Fall River, Mass.
King, Alex, & Co, 54 Leonard St, New York City.

Lane, J. H, & Co, N. Y, Boston and Chicago
Littlefield Mfg. Co, Pawtucket, R. I.
Mitchell, Jas. E, & Co, Boston and Phila, Pa.
New Bedford Mfg. Co, New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Sampson, O. H, & Co, 67 Chauncy St, Boston, Mass.
Sawyer, Manning & Co, 86 and 88 Franklin St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Tillinghast, Stiles & Co, 20 Market Sq, Providence, R. I.
Tucker & Cook Mfg. Co, Conway, Mass.
White, James F, & Co, N. Y. and Phila, Pa.
Whittier Cotton Mills, Lowell, Mass.

Glazed Yarns.

Arkwright, Sir Rich, & Co, Ltd, 69 Mercer St, New York City.
Blodgett & Orswell, Pawtucket, R. I.
Chadwick, Jas, & Co, Jersey City, N. J.
Kerr Thread Co, Fall River, Mass, and 29 Mercer St, N. Y.
Malcolm Mills Co, Frankford, Pa.
Warren, W, Thread Works, Westfield, Mass.
Whittier Cotton Mills, Lowell, Mass.

Harness Twines.

Bale, Stuart & Co, 51 Greene St, New York
Chadwick, Jas, & Co, Jersey City, N. J.
Hadley Co, 93 Milk St, Boston, Mass.
Kerr Thread Co, Fall River, Mass, and 29 Mercer St, N. Y.
Moore, C, & Co, 12 S. 5th St, Phila, Pa.
Warren, W, Thread Works, Lowell, Mass.
Whittier Cotton Mills, Lowell, Mass.

Hosiery and Knitting Yarns.

Arkwright, Sir Rich, & Co, Ltd, 69 Mercer St, New York City.
Buckingham & Paulson, 83 Leonard St, New York City.
Chadwick, Jas, & Bro, 241 Chestnut St, Phila, Pa.
Clark, Wm, Co, Westerly, R. I.
Croll, Albert Irvins, Boston, Mass.
Germantown Spinning Co, Germantown, Pa.
Globe Yarn Mills, Fall River, Mass.
Goodwill & Ashworth, Jamestown, N. Y.
Greaves, J. W, & Co, Industrial Trust Bldg, Providence, R. I.
Greene & Daniels Mfg. Co, Pawtucket, R. I.
Hardt, Von Bernuth & Co, 477 Broome St, New York City.
Howland Mills, New Bedford, Mass.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
Kerr Thread Co, Fall River, Mass.
Lesser, J. S, & Co, 398 Broadway, N. Y.
Littlefield Mfg. Co, Pawtucket, R. I.
New Bedford Mfg. Co, New Bedford, Mass.
Orswell Mills, Fitchburg, Mass.
Rockwell, E. M, Leominster, Mass
Sanford Spinning Co, Fall River, Mass.
Sawyer, Manning & Co, 86 88 Franklin St, N. Y.
Tillinghast, Stiles & Co, 20 Market Sq, Providence, R. I.
Warren, W, Thread Works, Lowell, Mass.
Wessendonck, Lorenz & Co, 44 Leonard St, New York.
Whittier Cotton Mills, Lowell, Mass.

Jute Yarns.

Lane, J. H, & Co, N. Y, Boston and Chicago
Wilmington Mills Mfg. Co, Wilmington, Del.

Novelty Yarns, Tinsels, Silk Noils, Etc.

Cranston Worsted Mills, Bristol, R. I.
Greaves, J. W, & Co, Industrial Trust Bldg, Providence, R. I.
Hardt, Von Bernuth & Co, 47 Broome St, New York City.
Malcolm Mills Co, 216 Chestnut St, Phila, Pa.
Mortgomery, J R, Co, Windsor Locks, Ct.
Sanford Spinning Co, Fall River, Mass.
Sawyer, Manning & Co., 86-88 Franklin St.

Mohair Yarns.

Hardt, Von Bernuth & Co., 47 Brooms St, N. Y.

Silk Yarns.

Adams, D. E, Athol, Mass.
Bale, Stuart & Co, 51 Green St, N. Y.
Cheney Bros, S. Manchester and Hartford Ct.
Griswold Worsted Co, 322 Chestnut St, Phila, Pa.
Hardt, Von Bernuth & Co, 477 Broome St, New York City.
Hawes, O. S, & Bro, Fall River, Mass.
Ryle, Wm, & Co, 54 Howard St, N. Y.
Sauquoit Silk Mfg. Co, 76 Chauncy St, Boston, Mass.
Wamsley, Philip, & Co, 34 Greene St, N. Y.

Woolen and Merino Yarns.

Greaves, J W, & Co, Industrial Trust Bldg, Providence, R. I.
Guerin Spinning Co, 92 S. Main St, Woonsocket, R. I.
Hardt, Von Bernuth & Co, 477 Broome St, New York City.
Hyde, E. S, 223 Chestnut St, Phila, Pa.
King, Alexander & Co. 54 Leonard St, N. Y.
Lesser, J. S, & Co, 398 Broadway, N. Y.
Mitchell, Jas. E. & Co, Boston, Mass, and Phila, Pa.
Rockwell, Edward M, Leominster, Mass.
Sawyer, Manning & Co, 86 and 88 Franklin St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Wesendonck, Lorenz & Co, 44 Leonard St, New York.

Worsted Yarns.

Abegg & Rusch, 92 Grand St, N. Y.
Alleghany Worsted Mills, Phila, Pa.
Bale, Stuart & Co, 51 Green St, N. Y.
Cranston Worsted Mills, Bristol, R. I.
Croft, Howland, Sons & Co, Camden, N. J.
Goodwill, Ashworth, & Co, Jamestown, N. Y.
Greaves, J. W, & Co, Industrial Trust Bldg, Providence, R. I.
Griswold Worsted Co, 322 Chestnut St, Phila, Pa.
Hardt, Von Bernuth & Co, 477 Broome St, New York City.
King, Alexander & Co, 54 Leonard St, N. Y.
Providence Worsted Mills, Providence, R.I.
Sawyer, Manning & Co., 86-88 Franklin St, N. Y.
Solis, Andrew J, Jr, & Co, 179 Devonshire St, Boston, Mass.
Wesendonck, Lorenz & Co 44 Leonard St, New York.

Yarns, Threads, Etc.

Banding.

Covel & Osborn, Fall River, Mass.
Heywood, M, & Co, Fall River, Mass.
Hodson, John M. Manayunk, Pa.
Moore, C. & Co, 12 S. 5th St, Phila, Pa.
Small Bros, Fall River, Mass.
Warren, W, Thread Works, Westfield, Mass.
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FRANK LEAKE.

TEXTILE WORLD.

Vol. VIII. JUNE, 1895. No. 6.

FRANK LEAKE.

Frank Leake is a leading figure among Philadelphia textile industries. President of the Star & Crescent Mills Co., allied with other enterprises, and active in benevolent and social affairs, he has been for years a popular man in the Kensington district. His business career is co-extensive with the history of the Star & Crescent Mills, which he established in 1882, although the struggle which led to the founding of that business, is perhaps a period of his life even more worthy of record.

The Star & Crescent Mills Co. developed from the business of Frank Leake & Co., being incorporated in 1888, with a capital of $200,000. The original plant of the company, on Lehigh Avenue and Hancock Street, has been added to gradually, until it now comprises an extensive system of works contained in the block bounded by Lehigh Avenue, Hancock, Somerset and Mutter Streets. The entire property is devoted to the manufacture of Turkish towels, and kindred articles, being the largest used for such production in the United States. It has in operation 214 special looms, equalling the work of 300 ordinary looms. Every standard grade of Turkish towel, towelling cloth, bath robes, tidies, etc., is turned out, also a patented specialty, known as the double finished towel, hard on one side and soft on the other. In fact, they make every sort of bath accessory.

The vats of the company's bleaching house hold six tons of towelling, and a conservative computation shows that fully ten miles of goods are woven daily. This wonderful total forcibly demonstrates the possibility of an industry which two decades ago was scarcely known. Americans are said to be the largest producers of goods of this character, also surpassing foreign makers in the design and coloring. To no one is more largely due credit for this result than to Mr. Leake, whose personality is strongly impressed on the entire dry goods trade of the country, particularly in connection with this line, viz.: housekeeping end.

The Star & Crescent Mills Co. made an elaborate and attractive exhibit of its goods at the Columbian Exposition, receiving five official awards. The concern has agencies in New York, Chicago, Boston and San Francisco, selling direct to jobbers and large retailers. It also has an extensive and growing export trade. Douglas Leake, the secretary and treasurer, is a brother of the founder, and has contributed largely to its success by his ability and painstaking qualities.

Frank Leake was born in Camden, N. J., December 15, 1856. He entered the dry goods and notions business in 1869, in which he continued seven years. With this experience as a basis, he entered the commission brokerage business for himself, and handled a number of different lines. Among

these was the Turkish towel account of Rothwell & Son. He represented this firm of manufacturers for several years on the road. In the introduction of these goods to the trade, goods that in the West and South particularly, were totally unknown, a strong personality was required, and Mr. Leake fulfilled this requirement—a stranger with a strange line of goods, representing a new and unknown firm—the foothold was gained, and this too on a small commission basis, paying all expenses therefrom. His effort to make a market for Turkish towels, was finally successful, and when he determined to enter the field as a manufacturer, his way was fairly blazed.

Mr. Leake has given much attention to benevolent work, and to enterprises looking forward to the public welfare. He is a member of the Philadelphia Bourse, an officer in the Y. M. C. A., and an active worker in the church of which he is a member. He regards no business or character as well based, which is not built upon principles of right and justice, and to this sterling sentiment is due his marked success.

Implied Warranty of Skill by Employee.

When a manufacturer sells a machine for a particular purpose, he warrants by implication, at least, that it is capable of performing such work. When a tailor, or similar manufacturing merchant, undertakes to make a suit of clothes, he impliedly warrants that they will fit, and when a mechanic engages in a certain capacity, he should be held to warrant his ability to perform such work to the same extent as the manufacturer, the merchant, or the professional man does, that he has the average amount of skill to fulfill the undertaking, for upon the skill of the employee must the employer depend for the execution of his contracts, or keeping up his reputation for quality of his goods upon the market.

The Supreme Court of Alabama, recently in deciding the case of Woodrow v. Hawving (16 Southern Reporter, 720), took this view. Hawving was a dyer in the employ of the Birmingham Steam Dye Works, and brought an action to recover an amount due for labor and work done. The defense was made that certain articles of wearing apparel were injured by him, which the employer was required to make good to the owners. This was corroborated by other testimony, that Hawving was not a first-class, skillful man in the business.

The court said: "A party may perform services under a special agreement; when the contract has been completed on the one side, and nothing remains to be done, but the payment of the money, he may bring an action which may be defended on the ground of a failure of consideration, in whole or in part, or that the services were not worth the stipulated price, by reason of unskillfulness or negligence in the performance of the services, and thus defeat or reduce the recovery; or the employer may set up a special contract of employment, over a breach, and, if the evidence justifies it, defeat the action, or recoup damages resulting from the breach. In this case, the evidence did not show that the employee expressly represented, at the time of his employment, or at any time, that he was a skillfull dyer; but, we think, the principle sound that one who undertakes under an agreement to perform certain work for another, impliedly stipulates that he is qualified to do the work, and is liable for damages resulting from a breach of this implied stipulation."

—An unknown colored man dropped dead in front of the Youth's Companion building at 7.55 last night. He had on no less than 4 coats and vests, 2 pairs of trousers, 16 shirts, 3 pairs of drawers and 2 pairs of socks. [Boston Advertiser.

This goes to show the benefit of an illustrious example. Dying is not the example referred to; instead, the determination to increase the call for textiles. Immediately after March 11, the mills began to start up.

Textile World

An Illustrated Monthly Magazine representing the Textile Industries of the United States.

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New England Textile Directory.

The October issue of the TEXTILE WORLD contained a complete directory of the textile establishments in the New England States, giving name of mill, location, railroad connections, distances, officers, agent, superintendent, capacity of mill, kind of goods made, water power or steam, whether dye house or not, selling agents, etc.

It is illustrated by specially prepared maps of each State, showing the location of each city or town where there is a textile establishment, and only such towns.

Middle States Directory.

The April issue contain the directory of mills in New Jersey, New York and Pennsylvania, with maps, etc.

Directory of Wholesale Buyers of Textile Fabrics.

In the January issue is contained a list of the large buyers from first hands, viz: The manufacturing clothiers, suit and cloak manufacturers, cloth jobbers, large jobbing and retail houses in the principal trade centres of the United States. In most instances the individual buyers' names are given.

Copies of October, January and April issues may be had for 50 cents each at any of our offices, as long as the editions last.

The Southern and Western States Textile Directory will be published in the July Number.

—Mexicans have lately been buying Texas wool in considerable quantities—a decidedly new departure. It may prove the entering wedge to a new market.

—A Fall River mill agent recently stated that the daily output of cotton cloth of the combined industries of that city, is now two miles a minute for every working hour.

—Agent Sampson of the Vassalboro Woolen Mill, Vassalboro, Me., has devised a new form of inoculation against strikes. He recently presented a crisp bank note to every one of his hands who did not join their comrades in striking.

—Aubrey Beardsley's fantasies in curved lines will soon be found in decorative textiles. A strikingly artistic form of drapery work may be undertaken, by applying the Beardsley style of drawing to mummy cloth, canvas, denims, etc. Whatever may be thought of this combination of decorative designing and cartooning, it has the merits of novelty and consistency. It is so uncommon to see the uncanny executed with exactness, which quality was instilled by Beardsley's early training as a draughtsman.

—Our St. Louis correspondent, C. H M., comes to the front again this month, with a long communication regarding the saving of baling cost on cotton. In spite of his extended argument, we can see no reason to change opinion, as expressed in the February issue of the TEXTILE WORLD. The improvements now being effected in baling will reduce waste and charges appreciably. Other schemes for reducing such cost, if not visionary, are, to a large degree, impracticable. We should almost as soon think of handling feathers with pitchforks, after the fashion of loose hay, as to attempt to market cotton, in any quantity, without baling.

Commencement at the Philadelphia Textile School.

The commencement exercises of the Pennsylvania Museum and School of Industrial Art, at the Academy of Music, Philadelphia, Friday afternoon, June 7, were attended by a large and splendid audience.

The trustees, members of the associate committee, committee of women and faculty, who occupied seats on the stage, were C. N. Weygandt, Mr. and Mrs. E. J. Walenta, Dr. Edward Brooks, superintendent of schools; Miss Magee, Mr. and Mrs. George V. Crozer, Edward Shippen, Mrs. Robert Piersol, Principal George H. Cliff, of the girls' normal school; Mrs. Cliff, Miss Beck, secretary of the school of industrial art.

Following the overture and prayer, came an address by Theodore C. Search, the vice-president, which proved in his best vein. Mayor Warwick next made an eloquent and witty speech, being introduced by Principal Miller, whose report followed.

It showed the number of pupils registered to be 717, an increase over last year of 158. The teachers number 25. There are 76 graduates this year from the different courses. In noting the changes and improvements during the year, Mr. Miller said the Textile School, which is the pride of the institution, has been greatly strengthened and improved. It is now thoroughly equipped for the production of all grades of fabrics. A complete set of machinery for carding and spinning was added this year.

Succeeding came the award of diplomas and certificates; then the award of prizes by William P. Pepper, the president; Mr. Miller, Frank P. Bennett, Mrs. Aubrey H. Smith and Mrs. E. D. Gillespie, who made pleasant remarks. Just previous to the closing musical selection, "Graduate March," dedicated to the school by the author, W. R. Stobbe, Dr. Edward P. Davis addressed the graduates. Music was furnished by an orchestra directed by W. R. Stobbe. Mayor Warwick made an earnest appeal for the support of the institution, which was spoken of enthusiastically by all, amid cheering.

Nearly all present went through the school after the prizes had been awarded. The evening brought dancing and refreshments. An extensive display was made of students' work on men's cassimeres, cloths, etc., in the large hall, an artistic showing being made of color matching, pattern drawing and color mixing. The competitors in weaving were: W. P. Nichols, John M. Walton, Herbert Armstrong, John W. Davis, worsted trousering; Charles H. W. Cliff, W. Blackwood, worsted back trousering; Herbert G. Coe, trousering.

The Crompton, Furbush and Knowles looms were those used. It should be explained that the term "general excellence," spoken of in connection with the awards, signifies the highest honor in the class specified.

In past years cash prizes have been awarded, but there has been a feeling that, in competition of this character, where the reward really lay more in the honor of winning the prize than in the value of the prize itself, everyone would be better pleased if permanent trophies in the form of medals would be substituted for the money prizes.

The TEXTILE WORLD offered a gold medal for the best work in the special day dyeing class; silver medal for the best results in the final examinations of the second year day class; a bronze medal for the best work in figure design and color study in the first year day class; bronze medal for the best term's work in the evening dyeing class.

Mr. T. C. Search, the vice-president of the institution, and whose efforts have contributed so largely to its success, gives the T. C. Search gold medal for highest honor, to the graduate of the entire three years' course.

The American Wool Reporter gives medals for excellence in different departments, and the Finckel Medal is given by Mr. Finckel, of Conyers, Button & Co., of Philadelphia, who is Prof. Finckel's father.

THE REPORT OF THE JUDGES.

We, the undersigned, chosen as judges

to award the medals, have given careful investigation to the fabrication, color, etc., exhibited. In making the awards, we have to say that the general excellence of the work was very marked throughout, and the proficiency attained by the competitors in the various classes, was, in some cases, so close that difficulty was experienced in reaching a just decision; therefore our award of honorable mention has special significance.

We hereby decide that the T. C. Search gold medal, to be awarded to the pupil attaining the grade of "highest honor," for the graduate of the three years' course, shall be given to Harland J. Maynard, Worcester, Mass. "Hon-

orable mention" to Thomas L. Flower, Philadelphia.

SECOND YEAR DAY CLASS.

The American Wool Reporter gold medal, for general excellence, to John W. Davis, Rochester, N. H.

The TEXTILE WORLD silver medal, for best results in final examinations, including woven piece of cloth, to John Walton, Providence.

"Honorable mention" to William Blackwood, Philadelphia, and William P. Nichols, of Providence.

The American Wool Reporter bronze medal, for best work in Jacquard designing, to John W. Davis, Rochester, N. H.

FIRST YEAR DAY CLASS

The Finckel silver medal, for general excellence, to George L. Osgood, Brookline, Mass.

"Honorable mention" to George L. Harrington, E. Rochester, N. H.

The American Wool Reporter silver medal, for the best results in final examinations, including woven piece of cloth, to Robert T. Francis, Pontoosuc, Mass.

The TEXTILE WORLD bronze medal, for the best work in figured design and color study, to Joseph Milson, Catasauqua, Pa.

SPECIAL DAY DYEING CLASS.

The TEXTILE WORLD gold medal, for best competitive results, to Walter C. Lott, Philadelphia.

"Honorable mention" to Howard C. Wilkinson, Philadelphia.

EVENING DYEING CLASS.

The TEXTILE WORLD bronze medal, for best term's work in dyeing, to Oliver H. Harrison, Philadelphia.

SECOND YEAR EVENING CLASS IN TEXTILE DESIGN AND MANUFACTURE.

The American Wool Reporter bronze medal, for the best results in the final examinations, coupled with the previous term's work, to Samuel Gaffin, Philadelphia.

The Industrial Art Society Evening Scholarship, for the most satisfactory progress, to Olaf Nils Falk.

CHAS. H. SALMON, of Thomas Dolan & Co.

MITCHELL STEAD, of Folwell Bros. & Co.

EDWARD S. KENDRICK, resident manager TEXTILE WORLD.

T. B. ABBOTT, resident manager Wool and Cotton Reporter.

FRED TURNBULL, of W. J. Matheson & Co.

The Textile School diplomas and certificates awarded were:

Diplomas—Thomas L. Flower, Harland J. Maynard, James H. Sayles.

Second year certificates—Herbert Armstrong, William Blackwood, Charles H. W. Cliff, Herbert G. Coe, John Davis, William P. Nichols, John M. Walton.

First year certificates—William G. Abbott, Joseph T. C. Bartmann, Howard H. Bromley, Carlton A. Caswell, George H. Collins, Lawrence M. Dillon, Robert T. Francis, Henry B. Green, George L. Harrington, William G. Knowles, Jr., William O. Lamson, Jr., Joseph Milson, George L. Osgood, Jr., George P. Parker, Samuel L. Pinkerton, Battle S. Searcy, Amandus E. Strampe.

Certificates awarded on the completion of the two years' evening course—William Bissett, Samuel Butterworth, Olaf N. Falk, Samuel Gaffin, John Hinfey, John Keddie, Frank Nettleton, Frederick Pfeiffer, Anton Scholz.

Special day dyeing class—Charles Horrocks, Walter C. Lott, Howard M. Wilkinson.

Evening dyeing class—Oliver N. Harrison, Walter K. Kuhl.

Massachusetts Textile School Bill Now a Law.

The Textile School bill has run the gauntlet of both branches of the legislature and the governor, just saving its hide. The finance committee of the house reported adversely, but the board of education managed to pull it through. We are glad the bill has passed. No one denies the need of textile education in America, particularly in the old Bay State, which has been outstripped in this direction by the enterprise of Philadelphians.

Much credit is due Mr. Frank P. Bennett, who worked for the passage of this Bill, both in the legislature and out of it. The movement has been forwarded materially by the help of Mr. Sanford, of Fall River, Mr. Cumnock, of Lowell, and other manufacturers who have interested themselves in the bill.

These schools can scarcely fail to awaken and foster textile aptitude, the buds of which would otherwise never have borne fruit. Employers and employees can well afford to work together toward the day when the domestic operatives shall stand on the same plane with the trained foreigner, as regards technical ability, and when America has wrested from lands across the sea the production of many fine fabrics, which are now imported.

America's Chance in the Eastern Market.

Sharp issue is taken with the suggestion of Consul General Jernigan, of Shanghai, that the decrease in China's imports of cotton is due to an extension of manufacture in that country and Japan.

Inasmuch as China is the largest foreign market for American cotton goods, the question is one of peculiar interest. China's imports of late years:

	1892.	1893.
United States	65,859,000 yds.	27,706,000 yds.
Great Britain	497,475,000 "	365,405,000 "

Japanese and Chinese statistics are somewhat incomplete. In 1893 Japan is credited with 46 mills, operating 600,000 spindles. China, it is estimated, now has about 350,000 spindles in swing, the number being rapidly on the increase. In fact, the production of the raw material has not kept pace with the erection of new mills in China, and as a result, Japan will be obliged to look elsewhere for her supply. As a matter of fact, the grand total of spindles in China and Japan is equalled by six or eight Eastern mills that might be named; consequently, several years must, of necessity, elapse before the competition grows very formidable.

The war interfered with the re-shipment of American goods from Shanghai, through which channel all United States imports pass, being exclusively consumed in northern China. English cotton imports go to the southern section of China, where there was no active warfare, and these, it is stated on excellent authority, showed no appreciable decrease.

Chinese and Indian cotton is very short staple, and does not make goods approaching in quality those made from American cottons. Japan is giving more attention to American cotton, which emphasizes the importance of a shorter route to the cotton fields of the South, such as the Nicaragua canal. Egyptians are already making a push toward Japan.

Style Suggestions.

It was the general expectation not long ago, that the light weight season would open earlier than usual. The heavy weight season has been so extremely backward, however, that it will make the present light weight season somewhat later than expected.

The opening of lines at this time is very poor policy. Buyers should be given time to work on their heavy weight stocks, before attempting the placing of orders on light weights. The selling of heavy weight goods always gives clothing manufacturers the tendency of the following light weight season, for from the most popular heavy goods, an excellent knowledge can be obtained of light weights that will be called for. There are now only two lines on the market, one shown by McIntosh, Green & Co., at 17 1-2 and 20

cents a yard. These are, of course, very cheap goods on the order of satinets. The other line is Abbott's kerseys and cassimeres.

Buyers are not ready to look at goods, but the untimely opening of a few lines, may precipitate a general opening, resulting in a long and tedious selling season. The too early showing of goods has another bad side. Buyers simply look at a line, and when ready to place orders and the same goods are shown to them again, they remark "its old." The best results are always obtained when orders are taken at the first showing of the goods.

The coming season bids fair to be a large one, of keen competition between American and foreign manufacturers. Serges and clay diagonals will sell as readily as in previous seasons, but prices must be made in competition with the cheap foreign labor, for in no line of fabrics, is the European manufacturer able to give lower prices. Covert cloths will sell largely, and owing to the low prices of foreign goods, domestic makers must manufacture at rock bottom prices.

It now seems that there will be a dearth of worsted stripes, a number of factories, on account of the worsted yarn mills strike, having made cassimere samples, instead of worsteds, as formerly.

In these, styles should be very neat; if broad effects are made they should only be obtained by changes in the weave, which will give the effect, without being as striking as if done by contrasting colors.

The general tendency is toward light colors. It is advisable for manufacturers, where lines are deficient in these colors, to add to them at once.

Boston's Wool Supremacy Waning.

Six months ago came a great flourish of trumpets from New York city, over the project of a wool exchange, which was to relegate Boston to second or third place in a jiffy. Bostonians preserved their complacency, nevertheless, realizing that the scheme possessed the wellnigh insurmountable objection of bringing business rivals side by side in fiercest competition.

Changes in tariff and territorial conditions, however, are steadily moving toward an end which may deprive Boston of her supremacy in the fleece business. Every indication points to Chicago as the leading market for domestic wool, while the foreign drift is unmistakably toward New York. Western dealers are beginning to positively refuse bringing their product to seaboard markets, where it squarely meets the foreign supply. In this connection it is worth while to note the premium on clip offered in Western markets.

New York has immense advantage, as a port, over Boston, in her far greater number of arrivals. Under the duties imposed on wool for several years, the New York dealers became dormant; now they are awakening to the superiority of their facilities. The Hub must bestir itself to successfully combat these purely natural causes.

—The total destruction of the Crocker Wheeler Electric Co.'s machine shop, Ampere, N. J., has demonstrated to the Boston Manufacturers' Fire Insurance Co., the need of three precautions:

First, that buildings which have trussed, joisted roofs of large areas should have a thorough system of automatic sprinkler protection, in order to prevent the quick spreading of fire, or else the underside of such roofs should be fully protected with incombustible material.

Second, that fire walls, to be of good service, should be carried up through the roof and parapetted to at least 3 feet above the same, and at points where buildings join together there should be no windows in the angles of the walls, or, if there are windows, they should be covered by good fire shutters, to prevent fire from spreading from one building to the other.

Third, that at least 40 pounds of steam should be kept up in boilers nights and Sundays, as well as working days, so that the fire pump can be quickly got into service.

Another Use For Cotton Cloth.

"Petticoat construction" is the derisive appellation given road building with cotton cloth, which experiment has been tried by the Massachusetts Highway Commission, with a considerable degree of success. While it is literally true that a Martha's Vineyard road was laid on cotton cloth, there has been a general misapprehension regarding the part played by the cloth. It was used for only temporary advantage, being selected largely because of its cheapness. The whole object of the cloth was to so hold together the sand beneath it that the crushed rock, in being rolled, would find greater difficulty in working down into the granulated quartz. The rock punctured the cloth more or less, but not enough to form a serious objection. The result raises an interesting question as to the extent of usage cotton cloth is likely to meet with in this connection. "This year," says Prof. Shaler of the Commission, "about two miles will be laid on such surface and the practice will doubtless be kept up unless a cheaper material is found." Jute bagging it is thought might be used, or anything—even glue, which would hold the sand together. It is on beachy sands almost exclusively that such precaution is found necessary.

An English View of the American Market.

HUDDERSFIELD, ENG., June, '95.

Editor of Textile World:

Covert cloths are likely to have a large sale in the American markets. They are made strictly all wool, fine staple stock, and look remarkably well. They will be made in drabs, light and dark brown mixes, sage mixes, blue and blue grays, and they will be sold in New York at 85 cents, 54 inches wide, finished weight 15 ounces. The following is the layout for these covert cloths, as manufactured here for the American market.

Very hard twist warps, 4¼ run.

Soft twist filling, 5 run.

3360 ends in warp, straight draw.

56 picks per inch.

Weight from loom, 16 ounces; finished, 15 ounces. Shrink 3 inches to the yard in finishing. Weave Fig. 1.

Low grade mills are doing very well on cotton warp worsteds, and also on worsteds backed with a heavy shoddy filling, which have been sold at from 65 to 90 cents, 54 inches wide.

One of the largest sellers of the season is a worsted of this character woven on a fine twill face, which has sold at 85 cents, 54 inches wide, weight 23 1-2 ounces. This is a fine black piece dye, and several thousand pieces have been sent to the American market.

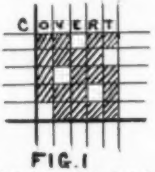


FIG. 1

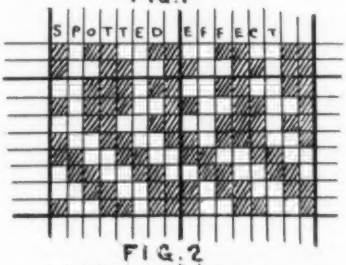


FIG. 2

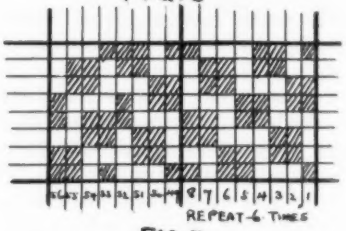


FIG. 3

This will be a big seller in 16 ounce goods in light weights. It is not only taken by the clothing trade, but quite a number of orders have been placed by the cloak trade.

Almost all the mills have had a good share of orders on low grade goods, and the strike at Providence, has been a great blessing for the Bradford manufacturers. There are several mills running night and day, and almost every mill has all it can turn out; something which has not been known for years.

Bradford and Huddersfield manufacturers are hoping that the Providence strike may continue.

The weave in Fig. 2, is for a cassimere or cheviot fabric, and is a very pretty spot effect; it should be made in contrasting colors, using light warps and dark colored fillings.

Fig 3 is an excellent sample, which is a fair type of the large overplaids which seem to be called for here, and which most of the English mills have introduced into their cassimeres and cheviots.

The shades which are on the green shades, will be likely to sell well, and black and green twist are used freely for the plaiding, and the sage mixes for the ground.

The following is the layout for Fig. 3, which is a fine weave for cassimeres or cheviot styles, but must be made using light warps, and dark fillings.

4 run warp, 3200 ends in warp.

4½ run filling, 46 picks per inch.

11-4 reed, finish 15 1-2 ounces per yard.

This pattern is varied by tieing in a fancy double and twist, and making a double overplaid. HUDDERSFIELD.

Are Color Formulas the Property of Dyers?

John W. Dempsey, late color mixer for John & James Dobson, of Philadelphia, has been awarded $10,000 in his suit to recover damages for the loss of certain alleged secret color formulas. The plaintiff asked for $50,000.

There is strong probability that the case will be carried to a higher court. Mr. Dobson, in fact, in an interview with a representative of the TEXTILE WORLD, expressed a determination to push the case, if need be, to the supreme tribunal. Everything hinged upon the question as to who had a legal right to the formulas.

Mr. Dempsey was with the Dobsons from April, 1873, to September, 1892. He had been engaged as a color mixer in England. Mr. Dempsey asserted that his formulas were partly secrets of the trade, which had been given him by his father, but principally discoveries made by himself.

His formulas and color recipes were kept in a series of blank books, each formula bearing a number. The key to this list was a separate book, known as the "color book," in which were preserved a number of samples of yarn dyed with the colors which the different formulas produced.

Mr. Dempsey advanced the claim that he paid for the different books, and made all of his discoveries of new colors by experimenting at his home in the evening, outside of working hours. The books were never allowed to leave his possession; when he had finished with them at the mill, he took them home with him every night so that no one could learn the secrets of his art.

On August 25th, 1892, Mr. Dempsey notified the Dobsons that he would leave their employ on the 10th of September. As he was leaving the mill on the night of August 30th, he alleged he was stopped by a watchman employed at the mills, when about to go home with his books, and informed that he could not quit the mill until he had given up his formula books. The watchman said this was by order of the Dobsons. Mr. Dempsey immediately wrote a note to the Dobsons, asking them what right they had to detain either him or his books, and shortly after he said he received a reply stating that he should leave the books, and that if they were his property he should receive them by calling the next day.

Mr. Dempsey refused to let his books go out of his possession, and prepared to stay with them in the mill all night. Then, he alleged, a policeman came to him and said that he could not do that, that he would have to get out. Mr. Dempsey then made his books up into a package and sealed them with his private seal, and left them in the mill.

The next he heard was several days later, when the Dobsons sent him a check for $178.88, the balance of salary due him. They kept the books, however, for nearly a month, and copied all the formulas out of them, according to Mr. Dempsey's allegations. When the books were returned they were all there except the color book, containing the samples, which, the plaintiff averred, they retained.

The defence set up the claim that the books belonged to the mills, and that the Dobsons were forced to take them from Mr. Dempsey as he was leaving the mill, because it had been reported to them that Dempsey was erasing the numbers from the pitchers in which the colors were distributed, thus losing the identity of the different shades and causing the firm to lose thousands of dollars. Mr. Dobson said that when it was reported to him that Mr. Dempsey was obliterating the numbers on the color pitchers, the witness had remonstrated with him, but Mr. Dempsey had not made any answer.

When the witness received the books, he had them taken into the city and copied by a type writer. The copies were locked up in the witness' desk, and remained there until brought into court. No one had access to them, and they had not been referred to. The formulas for producing different shades were supplied the carpet manufacturers by the color dealers preparing their ingredients. The witness said he never knew that Dempsey took the formula books away from the mill until the time of the trouble. He did not consider that Dempsey had any personal color books.

He gave orders not to allow Dempsey to carry anything away from the mill, but gave no directions about calling on a police officer to get Dempsey out of the mill. The color mixer who succeeded Dempsey at the mills, used formulas which he had combined himself out of his own head. The witness could not say if any of these formulas were the same as Dempsey's, and if they did correspond he was not aware of it.

In speaking of the ownership of the books themselves, Mr. Dobson said that Dempsey frequently came to the mill office for books, and that the witness remembers having supplied him with books similar to those containing the much disputed formulas, several times himself.

Robert Benham and Thomas Smith, two yarn printers employed at the mills, testified that on the day Mr. Dempsey left, the formulas were taken off a number of the pitchers, only the progressive color numbers remaining, which were of little use.

Charles Dougherty, assistant color mixer at the mills during Mr. Dempsey's tenure of the position, and doing the same work now, testified that he had not used Mr. Dempsey's formulas, but had invented them for himself. Under cross-examination, counsel for Mr. Dempsey asked him regarding certain formulas which produced colors used continually while Mr. Dempsey was at the mill and after he left. The witness admitted that certain of the formulas bore the same numbers as those in Dempsey's books, and made the same colors, but that he, the witness, had changed the formulas. Mr. Dougherty said that he carried many of the formulas in his head, and that copies of others had been given him by Mr. Dempsey in his own hand writing, and the witness had kept them for future use.

Counsel for the defendants then offered to show, by a number of witnesses, that the colors in the "shade book" could be produced by any color mixer.

Mr. Dempsey's counsel objected to this line of testimony, and the judge ruled that as the plaintiff had not shown that any formulas in the color books were original secrets of Mr. Dempsey's, it was not necessary for the defence to produce testimony to prove the contrary.

The judge said the only way to separate the original formulas from those common property, was to produce expert testimony, giving the value of the original parts.

Mr. Dempsey, upon being recalled in rebuttal, denied Mr. Dobson's statement that the firm destroyed shade books when they had no further use for them. Mr. Dempsey testified that he never knowingly allowed his assistants to keep copies of his formulas.

The judge, in making his charge, said the first question to decide was as to the ownership of the books; the second question that of damages. He

said no evidence had been submitted as to the value of the formulas therein contained. That they had a value is doubtful, and provided they did, such value would be difficult to show. No attempt has been made to show that these recipes are not known to the trade, and that they could not be produced in many different ways.

Continuing, he remarked: "There is no doubt that the retention of the books and the circumstances surrounding, constituted trespass. In dealing with such cases, the law not only regards value, but the legality and qualities of the act. The defendants say the books were a part of their business, and did not belong to the plaintiff; that they did not know that the plaintiff bought them with his own money. He was in the employ of the defendants, and received a salary with which he was apparently satisfied."

Fictitious Elements in Stock-takings.

The stock-takings of the cotton spinning companies in Oldham, England, and district, for the period (quarterly and half yearly) ending March, are, as announced by the English press, fairly satisfactory from the superficial viewpoint, considering the recent state of trade. The question is, however, says the Textile Mercury, whether the whole of the profits have actually been made, or losses made less by other circumstances. Some directors have doubtless taken advantage of the recent rise in value of raw material to correspondingly increase the price in process. In other words they have included profits which have not been earned, and which may never be realized. There can be only one right opinion as to the wisdom of such action. To reduce stock prices when cotton quotations go lower would place a concern in a somewhat fictitious position, as the stock in process would not be worth the money it was stated to be in the accounts. In one case reduction is made to render good your position, in the other you should not follow so that your circumstances would be better than disclosed in the accounts. The whole matter is summed up by saying that for concerns, like men, it is better that they should always stand in a healthier financial position than is disclosed on paper.

Shoddy Facts.

Much has been written recently about the present being a distinctively shoddy goods season, and one paper went so far as to say that the "American people were foolish to buy shoddy goods, of which they had had a *surfeit under the McKinley tariff*." This statement was evidently made without knowledge of the facts.

Under the McKinley tariff there was no surfeit of shoddy goods, as can be proven by any merchant at all conversant with the state of the woolen goods market for ten years. Before the enactment of the McKinley bill, there *was* a surfeit of shoddy goods. That measure, however, so greatly advanced the duties upon shoddy, that the imports, previously large, immediately declined, and finally ceased.

The Wilson tariff greatly reduced the duty on shoddy; the consequence has been, imports of shoddy have vastly increased. According to the United States reports, imports of shoddy and waste for the five months ending January, 1893, under the McKinley tariff, were about 140,000 pounds.

For the same period, ending January, 1894, the imports under the Wilson tariff amounted to 5,300,000 pounds, an increase of about four thousand per cent.

With the "hard times," the consequent reduction of wages of mill help, and the cheapness of foreign goods, manufacturers were compelled to use material cheaper than wool to body their fabric; so shoddy has had an extensive call to fill the demand for a cheap fabric, which is worn of necessity by large numbers of the American people, on account of the Wilson bill.

This measure reduced the duty on woolens, so that the American manufacturer was compelled to sell his goods very close, and with the revival of business come strikes, and in many instances an advance of wages, so that a large number of manufacturers will not make a cent of profit on this season's business. Perhaps these strikes may prove an indirect benefit, should they result in raising the price of goods for the coming season, for if this is so, there may be less dirt used.

QUESTIONS AND ANSWERS.

Under this head we shall undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especi lly invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

Sizes of Sweaters, Etc.

Editor Textile World:

Will you kindly give the standard sizes of boys' and men's sweaters.

Yours truly, H. R.

[Sweaters run in this relative fashion:

Size	34	36	38	40	42	44
Length	27	28	29	30	30	30
Width	14	15	16	17	18	19

That is, size 34 is 27 inches long, 14 inches wide, etc. Men's sizes most generally called for are 36, 38 and 40, in that order. In boys' sizes, running from 24 to 34, 26 and 28, are most in demand. ED.]

Complete Automatic Knitters.

Editor Textile World:

Will you please inform me if there is an automatic knitting machine built that will complete, or knit a complete stocking, and oblige a reader of the TEXTILE WORLD.

Respectfully yours, J. T McI.

[There are machines on the market which accomplish everything except closing the toe. We refer you to our advertising columns, where you will find the leading machines advertised. ED.]

"Tam O' Shanters" and "Fascinators."

AMSTERDAM, N. Y.

Editor Textile World:

Can you give us the address of the builders of knitting machinery for making "Tam O' Shanter" caps and "fascinators?"

S. L. K. C.

[We believe the Mayo Knitting Machine Co., of Franklin, N. H., make a machine for making the caps, and we learn that the Merrow Machine Co., 133 Sheldon St., Hartford, Ct., are making a machine to make fascinators complete, which is beyond the experimental stage, and which we are informed has proved very successful. These goods are also made on a warp frame.]

Hosiery Napping Machines.

Editor Textile World:

Can you advise us of the manufacturers of napping machines for napping hosiery.

W. KNITTING MILLS.

[Lewis Jones, Bristol, Pa., makes a machine for this purpose. Franz & Pope, Bucyrus, Ohio, also make a brushing machine, which is used, we believe, for the purpose of giving a moderate nap.]

Canton Flannels.

RALEIGH, N. C.

Editor Textile World:

Can you put me in the way of ascertaining all about weaving Canton flannels?

C. M. C.

[The answer for the above question will be too lengthy for this department, but in the July issue, if space will permit, we will publish an article on the subject, which will give full description of the weaving process. We do not remember to have seen any literature on the subject in book form.]

Manufacturing Cotton Underwear.

KNOXVILLE, TENN.

Editor Textile World.

I want to investigate the best kinds, cost and capacity of machines for manufacturing cotton underwear, and will be obliged if you will kindly make my want known to a manufacturer of such machinery.

W. H. C., Box 625, Knoxville, Tenn.

—The M. A. Furbush & Son Machine Co., of Philadelphia, has just placed on the market a new double headed back geared beamer for winding warp on the yarn beam from the reel; it is a great improvement, much needed by manufacturers.

—The hosiery and underwear business heretofore conducted by Lewis Jones, at Bristol, Pa., has been discontinued, and no one is authorized to contract any debts for his account. The Lewis Jones Knitting Co., of Winchester, Va., will manufacture a similar line of underwear, and M. C. Hughes, Bristol, Pa., a similar line of hosiery.

—Bliss, Fabyan & Co., have placed a large order for revolving flat cards and drawing frames with the Pettee Machine Works, Newton Upper Falls, Mass., for their mills at West Warren and Thorndike, Mass.

—The Merchants Mfg. Co., of Montreal, is running on several lines of cotton goods, including cheese cloths. Every overseer in this mill came from the States, and a better class of men cannot be found.

—The Newichawanick Co., South Berwick, Me., has put in ten new Crompton looms. This concern is turning out some very fine all-wool horse blankets. Frank Beaven is overseer of weaving.

—A contemporary says a concern in Stafford Springs, Ct., is running day and night and cannot fill orders. There appears to be small hope of that mill ever do ng business.

—A new Southern mill is described as located on Pumpkin Vine creek, one mile from Emerson, and five miles from Cartersville.

COTTON DEPARTMENT.

Spinning.

For the Textile World.

It is always impressed upon the spinner, that he must get as large a production as is compatible with good work, or, in other words, as good work as the individual mill considers will suit its customers. Just how much production, and how good the work must be, are disputed points, however, seldom, if ever, answered twice the same way.

On hosiery yarns, where quality is important, speed enters largely into the question, for when the speed is raised beyond a certain point, quality falls off. In this connection, there is a snag that has been run upon by many, in the past. Mr. A some day lays the facts of the case thusly before the super: "I was over B's mills yesterday, and saw his mules running nearly 5 1-2 full stretches a minute, and his yarn looks better than ours. Now, our mules are not much older than his, and they are about the same length, so I think we had better make arrangements to raise our speed." In some of the cases where this is done, the result is very discouraging to the management and stockholders. It is often asked, "why won't these mules spin as good yarn at a higher speed, as they are making now."

On mules built, say, ten years or more ago, no provision was made for quick backing off and drawing up, as on recently made mules, to meet the increased strains due to the higher speeds. The backing off friction has been enlarged by some makers, so that it will do its work more smoothly, and with greater certainty. The drawing up friction has also been enlarged. By such changes in these frictions, they can be run without the excessive slipping and attendant heating always so noticeable in old mules, on which the speed has been much increased.

The carriages have been made stiffer and stronger, the size of faller and back shafts increased, and so on. To have good spinning, which means good yarn, the motion of the carriage, in drawing out and in, needs to be as steady as possible. Take a weak carriage that is being drawn in keenly. When the drawing-in friction drops in, the square of the carriage draws in quite a little distance before the ends move. This means that there is an extra strain being thrown on some of the yarn, for, as the winding begins as soon as the square starts, the spindles in the part of the carriage that has not moved will start to wind on the yarn. Then, one of two things must happen; the yarn must snap down as soon as it stretches to its limit, or the counter faller will be pulled down by the strain, and deliver the yarn to the spindles. When this happens, it means, of course, that parts of the yarn of each stretch are being wound at different tensions, in different parts of the mule. While this may be of comparatively small importance, it has its effect on the general quality of the work.

Then, when the carriage draws up to the stops, it is with a bang, unless the check band is kept very tight. One reason why some old mules are so bad in this way, is because the shape of the drawing up and check scrolls is not such as to ease the speed up enough, as the carriage lights in; the carriage should strike firmly in to the stops at each stretch. Trouble results from weak frictions, which slip badly and draw up the carriage at varying speeds. On some stretches, the carriage will strike in hard; on others, it will not get up to the stops.

The lighting in of the carriage, and unlocking of the fallers, are points

where considerable bad work is made. It is easier to put kinks in the yarn, than it is to drag them out; so the unlocking of the fallers should be so set as to give, as nearly as possible, just the required amount of yarn to wrap around the spindles, as the fallers rise. As it takes more yarn to wrap on the spindles at the first of a set, than when the cops are full, the fallers must be unlocked enough earlier to give this increased length. To accomplish this, the monkey tail or boot leg sword is curved, so that when the cops are just starting, the extreme end of the monkey tail strikes the knocking off bracket, unlocking the fallers. Then, as the cops build up, the monkey tail strikes higher each stretch, unlocking a little later.

Some mules are running, which throw many kinks on the top of the set, just on account of the shape of the monkey tail, as it is not sufficiently curved to unlock the fallers, at as late a point as it should, when the cops are getting full. In this case, it is only necessary to take the bracket off and file it to a sharper curve. Be careful, however, and not overdo the matter.

Kinks are not as often due to the time the fallers are unlocked, as they are to winding. For example, take a mule on which the fallers swoop down at one point, while winding, and then come away up again. The spinner has to keep his winding so that his ends will not snap down during the swoop of the fallers; but by doing this the counter faller is too high, when the mule strikes in. The winding is affected by the position of the quadrant, the size of quadrant pinion, the size of winding drum, and by the shape of the cop. As to the position, it is, as a rule, better to work the quadrant as far back as can be done with advantage, which helps in preventing the fallers from rising so high when the mule starts in off the catch, and digging down as the carriage strikes into the beam. The method of many, is to set the quadrant straight up and down, when the bowl of the boot leg slide is on the highest point of the rail. While this rule will work all right on some mules, it will not on others. The spinner must be governed by the way in which the mule works.

The size of the quadrant pinion should be such as to give the quadrant sufficient movement to perform the winding evenly, and at a proper ratio; when too small a pinion is on, the winding will be too tight. In an extreme case, it would not be possible to give the quadrant enough strap to prevent the ends from winding down, while, on the other hand, when too large a pinion is on, the winding is too slack. In regard to the size of quadrant pinion, and diameter of winding drum, the makers of mules try to give just what is right; but sometimes a pinion can be changed a tooth, one way or another, with advantage.

When a mule is sent out with a roller motion on, the size of the winding drum is calculated, for the extra length of yarn delivered each stretch by the roller motion; when the roller motion is thrown out of gear, it is difficult, on some mules, to get satisfactory winding. This trouble can be, at least, partly overcome, by lagging the winding drum with leather. This is all right for a makeshift, say, in a case where it is only intended to run without the roller motion for a short time, while spinning a certain kind of yarn; but to make a proper job, a new winding drum of the correct diameter should be procured.

(To be continued.)

Cotton Machinery in Picking and Carding Rooms.

For the Textile World.

Cotton grows, in what it would be natural for us to call pods, but planters call them bolls. When cotton is ripe, the bolls open, the fibre being curled up around the seeds. This is a provision of nature for its own propagation, but at this point art lays hold.

The bolls begin to open late in July or early in August, according to the season, and when a sufficient quantity has opened, to allow the pickers to begin gathering, each picker is provided with a bag suspended from the neck, so

that both hands may be used with advantage. The contents of all the open bolls are transferred to the bags; the pods that have been ripe and open the longest have shed their contents on the ground, or they have been beaten out by the action of the wind; but these are all collected by the pickers; hence, we find dirt and leaf in cotton.

The pods do not all open at once, and after the cotton pickers have passed over, they go over and over again, gathering as the crop ripens. Four months sometimes elapse before they have finished gathering. Frost finally stops the growth of the plant and kills the leaves. These leaves soon dry and crumble, and get mixed with the cotton.

All this goes to be ginned and put into bales. It is then shipped to the mills, to be made into yarn and cloth.

Cotton differs, in one particular, from any other vegetable fibre; each fibre is a little independent twisted thread, the twist so close, that it cannot be seen with the eye, though discernible with a powerful glass. This property gives the fibres an attraction to each other and an adhesiveness, after being joined by extraneous twists, rendering them capable of a tenuity far beyond any other vegetable fibre. They are considerably affected by the atmosphere, and in working will absorb, under certain circumstances, it is said, five per cent. of their own weight in dampness.

Cotton fibres are often injured in the first process of manufacture into yarns. The picking machinery is liable to injure them in many ways, such as over crowding, close setting, too large a draft, holding between the bite of feed rollers while coming in contact with beater blades, too heavy feed, etc.

The writer has under his charge two Atherton self-feed lappers, with two rigid beaters, each producing 30,000 lbs. of cotton on rolls each week; also three of Mr. Atherton's intermediates, with his patented eveners doubling four into one, producing the same amount as self-feeds, minus the waste. Following are three finisher lappers, one beater, with the eveners.

These machines can be adjusted to such a nicety that there is little danger of injury to the cotton fibres. This machinery has been found to produce clean, even work, wound into rolls, which, when placed upon the card, winds off in one sheet, without split laps, an advantage every carder and superintendent will appreciate.

Pickers, or machinery for opening and ridding cotton of foreign substances, such as leaf, sand, seeds, nibs and blights, should be of the best. This department is most sadly neglected. Mill owners, mill agents and superintendents look to this end last. Upon the preparation of material for the use of all the other departments, largely depends the pecuniary success of the concern.

(To be continued.)

Finishing Ticks, Plaids and Denims.

RECIPES FOR CLOUDING MIXTURES.

II.

The 3.50 yard satteen ticks, are never loaded with good success more than 20 points, and not always to that extent as it is impossible to preserve the soft, full, smooth feel absolutely necessary to secure sales. They should never be stuffed, but many manufacturers in their eagerness for large profits, resort to this means. Result, large loss of trade.

It is not so much stuffing, that spoils goods, as its abuse. If a manufacturer starts in this direction, he keeps trying a few points more, until he imposes a task on the finisher well nigh impossible.

Here is a mixture that can be used with fair success, and will generally defy detection, where not more than 20 points weighting is required. To 100 gallons of water, add 15 quarts of china clay, 20 quarts of wheat starch, 10 quarts slashene paste, 1 quart soluble oil, and 1 pound of beeswax. Put in the clay and water first, add the starch after filling with cold water, in prescisely the same way as prescribed for the other mixture, after which boil the whole for 20 minutes and add other ingredients; the whole is then boiled a half hour.

In applying, a slight amount of steam should be kept on in the kettle and the paddle kept slowly rotating, which adds materially in keeping the mixture at a uniform density while using. The object of the wheat starch is to full the goods, and impart a bulky, stocky feel, which cannot be obtained from the use of corn starch, as it gives a stiff papery feel. The slashene paste and clay mix well together, forming the bulk of the weighting material. The soluble oil has a softening tendency, and counteracts to a great extent any stiffness which the mixture produces on the goods. The beeswax tends to hold and brighten the colors, and aids slightly as a softener and gloss producer.

When sized and dried it is important that goods have a heavy calendering with hot steam rolls, and a plentiful use of steam before the cloth enters the rolls. This operation breaks up the harshness and stiffness produced by the size, and puts on the gloss and smooth soft feel.

Regarding 4.50 yard plaid, this fabric is loaded from 40 to 50 points, and sold to the trade as 4 yard goods. It is used almost exclusively for cheap wearing apparel, shirts, frocks, etc., in the warmer climates, a large quantity being manufactured expressly for export trade with South America. The way to handle these goods and get the best results: Have sizing apparatus, drying cans and tenter frame, all in one machine as it were, so that cloth coming from the squeeze rolls in the size trough, is transferred immediately to a set of cans, say six in number, running from them, through wooden rolls, which feed it, down in front of tenter, in a partly damp condition, which allows it to stretch slightly on frame. Some may say, what is the object of a tenter frame in this connection? Could not the goods be dried and calendered without its use? They could certainly, but it is to preserve the width that frames are used. For instance, if the woven width was 28 inches, and after leaving cans 27 1-2 inches, there is bound to be 1-2 to 3-4 inch draw-down on calender, leaving the goods at finish 26 3-4 inches wide, or thereabouts. If they had gone from cans directly on to a tenter frame, they could easily have been stretched to 28 3-4 inches and finished on the calender at the width originally woven (28 inches) and sold accordingly.

In setting the tenter for this particular line of work, the paws at the front of the frame on first joint should be about 22 inches apart, and at the end about the width of the cloth, which is, in this case, 27 1-2 inches. The next joint being set at the lower end to 28 3-4 and all the remainder on the machine the same, will deliver the cloth in that condition, allowing 3-4 of an inch for draw-down on the calender. The mixture to be used in loading these goods is: To 100 gallons of water put 30 quarts of potato starch, 30 quarts of china clay, 12 quarts of slashene paste and 1 quart of red oil. Prepare exactly in the same way as prescribed for the satteen ticking.

—The next chapter of "Chats on Cotton Combers," is held over until next issue.

Can Cost of Baling be Saved?

In the Question and Answer department in the TEXTILE WORLD, for February, under the caption "Can Cost of Baling be Saved," the editor says "the plan brings with it three serious questions: Insurance, storage, facilities, moisture." It is to be regretted that no positive information on any of these questions is vouchsafed by the editor. For the information of those interested in the matter, I will say that statistics on the subject of transporting cotton in the seed do exist, and that they are not, as the editor infers, on a diminutive scale.

Below, I exhibit a schedule of charges that cotton now pays for the simple privilege of being handled and transported in the bale. It is self-evident that reform in the method of raising and handling cotton in this country must obtain, or else its production must be reduced to the limit of the home demand. If the proposed plan of shipping cotton in the seed from the plantation to the cotton mills in New England, ever obtains, then the obstacles that now confront it, in the minds of many people,

will vanish like a dream. By what rule of logic is the conclusion reached, that the owner and manager of a cotton mill cannot own and manage a cotton plantation. When the New England spinner becomes wise enough to own the land on which the cotton that his mill consumes is grown, then railway managers will co operate with him, to the extent of making rates on cotton in the seed, that he can well afford to pay. My long experience in the freight department of two important railway systems, warrants me in saying that any movement that will increase the tonage of a general crop, like that of cotton, from two to three hundred per cent., must, of necessity, be supplemented by a material reduction in rates of freight. Practically, the cost of raising a crop of cotton is no greater for one year than it is for another.

But the market value of the staple is ever fluctuating. There may be times when it falls to, or even below the cost of production. But the idea that it will remain at that figure, is opposed to sound reason. The notion that the price of raw cotton can be advanced, by simply reducing the acreage in the United States, is arrant nonsense. Should the industry be abandoned here, the world would not be slow to forget that Americans ever raised any cotton. It is a singular coincidence, to say the least, that at the very time when the cotton growers of this country are "resolving" in convention to reduce the acreage, and thereby advance the price, Egypt, with a crop of one million bales, of 750 pounds each, is expending forty million dollars in irrigating the valley of the Nile, with a view of increasing her cotton acreage some four hundred per cent.

The United States is now producing two-thirds of the world's cotton supply, but with Russia, Germany, France, Egypt and Portugal all actively engaged in cotton raising, it is hardly possible that our present ratio of production can be maintained. As this country consumes less than one-third of the cotton it produces, it is self-evident that we must turn to the outside world to take the other two-thirds. It is a terrible misfortune for the producing class in the United States, that the financial and commercial affairs of the country are dominated by quacks in the science of political economy. One school insists that the present anomalous condition is due entirely to foreign immigration. Another, that we are suffering from the effects of over production. Whenever the Old World enters into competition with us in the manufacture or production of any commodity, a decline in the price of that commodity is sure to follow.

Through a vicious system of duties on imports, we are hypnotized into the belief that a tariff is the only remedy for this industrial evil—foreign manufacturers. Of course, we can make the duty prohibitory, but in the end the effect will be worse on us than on the foreigner. But when we are confronted with large wheat and cotton crops of foreign growth, of what avail is a tariff? If the productions of cotton and wheat must be restricted to the requirements of the United States only, what will be the result to the farmers and common carriers of this country? With foreign immigration shut off, the domestic demand is likely to remain small.

In the following statement the figures are based on a nine million bale crop; the amount invested in cotton gin plants is in excess of the sum stated, and all the crop is not carried away in ships; hence, the bales that are moved to the consumer by rail should be deducted from the estimate. The statement does not contain all the charges that cotton has to pay for the privilege of going to market in the bale. At best, figures are dry reading, but they never lie, unless liars make the figures.

Amount invested in cotton gin plants in the Southern States—$400,000,000. Interest, insurance, taxes and repairs are equal to 20 % annually—$80,000,000.

Cost for labor in baling (30 cts. a bale),	$2,700,000
Cost of bagging, ties and twine (75 cts. a bale),	6,750,000
Cost of compressing (50 cts. a bale),	4,500,000

Sampling and classing (10 cts a bale),	900,000
Weighing (15 cents a bale),	1,350,000
Storage a bale for first month, 50 cts,	4 500,000
Factors' commissions ($1 a bale),	9,000,000
Express charges on samples (5 cts. a bale),	450,000
Drayage in and out (25 cts. a bale),	2,250,000
Charges of screwmen for storing in vessels (60 cts. a bale),	5,400,000
Loss due to sampling (30 cts. a bale),	2,700,000
Freight on 112,500 tons bagging and ties used to cover nine million bales at $17 a ton,	1,912,500
Total,	$122,412,500

To this add ninety million dollars to cover the injury to the crop by bad ginning and careless packing. Startling as this statement is, it is approximately correct. Is there any general crop in the world that can bear up under such a burden as this? The statement may seem absurd, but I make it, nevertheless, that if ten per cent. of the amount now invested in gin plants was put into central ginneries, they would be sufficient to gin the entire American crop, in a superior manner, at a minimum cost.

ST. LOUIS, MO., C. H. M.

The Question of Humidity.

Conditions of climatic suitability and means of modifying unfavorable circumstances, in order to produce better results in the processes of manufacturing, form the subject of this article. Most of the facts herewith given, are founded upon investigations made by B. A. Dobson, of Bolton, Eng., and contained in the paper on the subject discussed at the September meeting of the New England Cotton Manufacturers Association.

It is hardly necessary, at this late day, to spend space in speaking of the relation of heat to fibre. Almost everyone knows of the peculiarities of the cotton fibre, its harshness when cold and dry, also the congealed state of its waxy envelope, under similar conditions. Of course heated air can be supplied in sufficient quantities to render the fibre supple, but unfortunately when hot and dry, the fibre is peculiarly susceptible to the influence of electricity.

From first to last, in a cotton spinning mill, free electricity interferes in every operation. Allowed absolute liberty, inferior product is the result. The older mills with comparatively small rooms, giving little opportunity for the entrance of extraneous air, experienced much less difficulty in this direction. Many mills of recent construction, especially those fire proof, are ordinarily so charged with electricity, that cotton fibre stands out from the iron work from one to three inches, radially to the centre of electric attraction.

Very often this comes from the slipping friction of driving straps. The force of this electrical influence may be sometimes observed by noting the refusal of cotton issuing from a drawframe roller, to pass down the funnel to the coiler, instead floating in the air like a snake, over the calender rollers and settling to the floor. The objectionable phenomenon often disappears as soon as the rooms are heated, although it is sometimes necessary, in addition, to moisten driving straps with composition. It may be said in passing, that cotton or wool charged with electricity, is exceedingly difficult to discharge; only time and a kindly atmosphere can effectually accomplish it.

Steam has been allowed to flow into weaving sheds to "kill the electricity," when, in reality, the steam was developing the same quality of electricity existing in the room. In this connection, it should be remembered that too great a proportion of moisture weakens the elasticity of the fibre. One writer, in treating the subject, draws this conclusion: The whole question of escaping from electrical trouble, will, I think, be found in the matter of relative humidity. If there is sufficient moisture in the atmosphere, there is no trouble; if there is not, electricity always appears.

Air properly moistened disengages the electricity existing in the fibres.

In making a comparison of the natural humidity of districts, three points are always to be considered, their importance being in the following order: mean temperature, extreme range of temperature and natural percentage of humidity under varying temperatures. It should here be stated, as a principle, that the less the range of temperature, the more regular the degree of humidity, the better the conditions. The influence of vapor is best realized muggy dog days and crisp winter weather.

In order for cotton to work well in the first processes of manipulation, the dry bulb thermometer of the common psychrometer should stand at 78 degrees, and the wet bulb at 66 degrees, which would make the dew point 58 degrees, and the relative humidity 52 per cent. This would give 5.371 grains of water vapor per cubic foot of air. Cotton fibres, with this condition of atmosphere, will draw even, and very readily assimilate. During very many of the atmospheric changes constantly taking place, it is found impossible to hold the cotton fibres well in hand. This is more noticeable when dry atmosphere prevails with a dry northwest wind blowing for 24 or 36 hours. It is frequently the case, where these changes take place, that the amount of water vapor in a cubic foot of air will drop as low as 4.290 grains. Thus it will be seen that the question of humidity is intimately allied with that of temperature.

(To be continued).

Calculations for Cotton Goods, Tape Stripes.

For the Textile World.

The first natural departure from "plain" cloth, is seen in what is called "tape stripes." It is usually composed of double the number of threads in plain cloth, distributed at regular intervals, forming the "pattern" on the otherwise plain cloth. It is obvious that this necessitates a method of calculation unlike that used for plain cloth. It is imperative to get the number required in the warp, as the number of ends required to produce cloth of a certain width, bear no constant relation to the number of dents used.

For instance, if it is desired to produce a tape pattern as follows: 1½ inch plain, ¼ inch tape, ½ inch plain, ¼ inch tape, ½ inch plain, ⅛ inch tape, you cannot, as in a calculation for plain cloth, simply multiply the dents used by 2, and add selvedge to get the total ends of warp. This rule must be used:

Subtract selvedge dents from total dents to be used, and divide balance by number of dents used in one pattern; multiply the quotient by the number of ends in one pattern, which gives the total ends required inside of selvedges. Add to this the ends used in selvedges, furnishing the total ends required.

Example: Find ends required in warp for a cloth with counts 64×64, yarns, 40 and 45, width, 28 inches, and of the pattern previously given.

To find the number of dents required, 64—4=60÷2=30 dents an inch of reed. The width of cloth wanted being 28 inches, with allowance of 7 per cent. for shrinkage (about 2 inches), makes the reed space 30 inches, which multiplied by dents an inch of reed (30) gives 900, dents wanted.

			Ends.	Dents.
Selvedge			28	in 7
1½ inch plain,	equals	1 pattern.	96	48
½ inch tape,	"		64	16
½ inch plain,	"		32	16
¼ inch tape,	"		32	8
½ inch plain,	"		32	16
⅛ inch tape,	"		16	4
Total,			272	108

According to the rule given, subtract selvedge dents (14) from the total number (900), leaving 886 dents for body of cloth. 886÷108 (dents in one pattern)=8 patterns and 22 dents over. The 22 dents extra, used in their proper order, would give 44 ends plain between tape stripe 16 and the selvedge, while there are 96 ends between tape stripe 64 and the selvedge on the other side, making an unbalanced pattern.

The space of "plain" between the selvedges and tape stripes next to them, should always be equal, and may be made so thusly: Add to the 22 dents remaining, the 48 dents next to the first selvedge, 22+48=70 dents÷2=35 dents. In the pattern arrangement,

substitute 35 for 48, and place the difference (13) at the bottom, which will give this pattern arrangement:

		Ends.		Dents.
	Selvedge,	28	in	7
8 patterns.	Plain,	70		35
	Tape,	64		16
	Plain,	32		16
	Tape,	32		8
	Plain,	32		16
	Tape,	16		4
	Plain,	26		13
	Total,	272		108
	Plain,	44	in	22
	Selvedge,	28		7

This arrangement begins with 70 ends plain, and finishes with 26 ends plain, which, coming together at each repetition of the pattern, equals 96 ends, the number of ends plain wanted, except next to each selvedge, where there are 70 ends plain, giving a cloth with both edges similar.

Having settled upon the arrangement of the pattern, the next calculation is to find the total number of ends required in warp, and to determine that the correct number of dents are in use.

Ends in each pattern.		Dents in each pattern.	
272		108	
8	No. patterns.	8	No. patterns.
2176		864	
44	Ends over.	22	Dents over.
56	" selvedge.	14	" selvedge.
2276	Ends total.	900	Dents total.

The drawing plan may be made practically a copy of the pattern arrangement, as follows:

30 dents reed in 30 inches space.
Ends in warp, 2276 No. 40.
To cotton harness, 30 eyes an in. each.
Draw selvedge, 2 ends each eye.
Draw plain, 1 end each eye.
Draw tape, 2 ends each eye.

28 Ends selvedge.

8 times.
- 70 Ends plain.
- 64 Ends tape.
- 32 Ends plain.
- 32 Ends tape.
- 32 Ends plain.
- 16 Ends tape.
- 26 Ends plain.

44 Ends plain.
28 Ends selvedge.

Reed selvedge, 4 ends a dent.
Reed plain, 2 ends a dent.
Reed tape, 4 ends a dent.

To find the average number of yarn: Divide the counts by their numbers, add the quotients, and divide in the total of the counts.

Example: Ends in warp, 2276÷28 (width of cloth)=81 ends an inch, any sley. The actual average count is 81×64; 81 (any sley)÷40 (number of warp)=2.025; 64 (picks an inch)÷45 (number of filling)=1.422+2.025=3.447; divided in 145 (the sum of the counts 81+64)=42.06, average number of yarn. The statement concerning the construction of this cloth, would read thus:

Counts, 64×64.
Average counts, 81×64.
Yarns, 40 and 45.
Average yarns, 42.06.
Width, 28.

In order to assist the novice in making a statement of counts and yarns used, the warp is always stated first, as it is the part of the cloth with which we have first to do. This being an invariable rule, there is no confusion or doubt arising as to the meaning of such statements. Further, it may be interesting to know the values of the quotients 2.025 and 1.422.

It will be noticed that they were obtained by dividing the number of threads, in each case, by its number or size, which simply reduced them to their equivalent number of threads of No. 1 yarn; in other words, reducing the different counts and yarns to a common term of value. Consequently, 2.025 threads of No. 1, equal in value or weight 81 threads of No. 40, and 1.422 threads of No. 1, equal in weight 64 threads of No. 45, while either will equal in weight 145 threads of No. 42.06, the length figured upon in each case being the same.

In the rule to find reed required, the 4 subtracted from 64, is the number of threads an inch allowed for shrinkage of the warp threads, from reed to cloth. A 30 dent reed holds 60 ends an inch; the shrinkage, 4 ends an inch, gives the required counts, 64. The counts of a cloth, refer to the part of it which is "plain" or "ground."

WOOLEN DEPARTMENT.

Picking.

Picking mechanism is constructed and timed to follow shedding. The operation consists in passing a shuttle containing weft between the upper and lower lines of the warp.

With the exception of a few experimental looms, the method adopted for many centuries, by weavers of all countries, was to take the shuttle in one hand, throw it through the shed, and catch it with the other hand, as it emerged from the opposite side. In 1738, however, Kay introduced what was known as the "fly shuttle," a simple addition to an ordinary slay of boxes placed at opposite ends, for the reception of a shuttle. A box consisted of a bottom, two sides and one end.

Over each box, and extending its entire length, a metal spindle was fixed, for guiding a picker or driver, used to propel the shuttle. Both drivers were connected by cords, with a wooden handle, known as a picking stick, which the weaver grasped with his right hand.

By rapid lateral movements of his arm, the shuttle was jerked with sufficient force to ensure its entering the opposite box.

Kay's invention was slow to find favor with weavers of his time, but when once adopted, it soon displaced the older method, and became almost universal. Constructors of modern looms have principally confined their attention to improving and altering Kay's invention, to suit the new conditions introduced with steam power. It is indeed difficult to imagine a better or simpler all around motion; still, with these advantages, picking remains the weak point in a loom. Experience has proved it to be uncertain in action, costly to keep in order, and by far the most dangerous part of the machine. More serious accidents result from defective picking, than from all the remaining parts of a loom put together, notwithstanding that for a century inventors have labored and spent to escape the most objectionable features.

These inventions include a host of picking motions, shuttle guards, swells, check straps, fast and loose reed appliances, pickers, and an endless variety of devices, many of which are the result of a misconception of the problem, for they attempt to deal with the effect, instead of the cause. To fully appreciate the defects liable to be developed by a negative propelling motion, attention must be paid to the shuttle itself, which is made from hard, smooth wood, pointed at both ends, and tipped with steel. It is hollowed in the centre, for the reception of the filling, the last mentioned being used in the form of a cop, wound upon a wooden or paper tube, and pressed upon a metal tongue in the shuttle, the tongue being hinged at one end, and extending almost the length of the hollow part. This tongue retains the filling in one position during the weaving, and allows it to be drawn away as a continuous thread, through an eye fixed in the front of the shuttle.

The rapidity of motion in a shuttle, and an imperfect controlling force, are the chief causes of serious defects in the working of ordinary picking motions, but it remains to analyze the various forces which tend to divert a shuttle from its true course. Weight effects its movement. A study of mechanics teaches us that energy possessed by a moving body varies in proportion to its weight and the square of its velocity; hence, as a shuttle loses weight each time it moves across a loom, equal to the weight of filling drawn away, a pro-

portionate diminution of force takes place, and any obstruction is more liable to divert a light, than a heavy shuttle. Therefore, unless an almost empty shuttle is heavy enough to overcome every resistance, and pull its filling close to the selvage of a fabric, there will be a constant risk of flying out. This is the evil most feared by the weavers.

The drag of a coarse filling, as it passes off at the shuttle eye, being greater than that of a fine yarn, necessitates the change from a light to a heavy shuttle, when an alteration is made from a thin to a thick filling. The position of the centre of gravity, with relation to the direction of force employed to propel a shuttle, has an effect upon its motion.

The centre of gravity has been defined as a point which does not change its position in a body, when that body is turned in any direction; and further, if a body, free to move in any way, is subjected to a blow, motion will be in the direction of the straight line in which the blow is delivered, provided the line passes through the centre of gravity; but unless the force acts through the centre of gravity, the body will not move, as a whole, but will revolve.

A shuttle is not free to move in any direction; still it moves at a high velocity, without being under positive control, and it is, therefore, imperative that the force employed to move it, and that the parts used as guides, shall act to minimize any tendency to rotate, or fly out.

Rotation can be checked by placing guides, say reed and race board, against the sides of the shuttle, farthest from the line of force. For this reason, some textile experts advocate placing the shuttle tips a little nearer the top and front, than the back and bottom, or so constructing a shuttle that the line of force shall be above and before the centre of gravity.

By so doing, it is argued that pressure will be exerted against reed and race board, and the tendency to fly up or forward will be checked at a slightly increased cost of friction and power, which are small matters compared with the risks attending a shuttle flying out. Other experts advocate placing a shuttle tip as near the race board as possible, in order that it may pass beneath entangled warp, preventing an upward movement in the shuttle.

Chenille Cutting Machine.

A chenille cutting machine, of English invention, was recently described in the Textile Manufacturer. Now that the adoption of chenille fabrics, for curtains, table cloths, and similar uses, is becoming so general, the device will interest many manufacturers engaged in similar lines.

Chenille is obtained by cutting the fabric across the weft, into narrow strips, each strip having a central warp thread, which is intertwisted with, and securely holds the severed weft ends, forming the pile of the cord. The method of cutting the strips, most commonly practiced, is to cut the strips by hand, with scissors, a costly and laborious operation. Machines have not been generally successful, owing to their defective and clumsy design, and injury to the central warp threads.

A simple and efficient machine, lacking this and other defects, has successfully passed through several months' trial. By this device, uneven division of the wefts are prevented, an improved form of cutters being used for dividing the wefts. These cutters are thin steel discs, with sharpened edges, separated from each other by distance washers.

The pitch of the discs varies with the pitch of the binding warp threads to be cut. The breadth of the threads may be altered by inserting thicker or thinner washers. In front of the cutters is a plate provided with slits for guiding the central warp threads, being so cut that each thread is always in a position equi-distant from the cutters and every other thread. This ensures an equal length of cut weft on each side of each warp thread.

The chenille is coiled at one end of the machine on a flanged roller beam. This beam, if preferred, may be the roller on which the fabric is coiled, as it is woven in the loom, the roller being afterward placed in the frame bearings. The axis of the roller has a hand wheel for use, when desired, and when being wound, the chenille may be passed through stretching bars.

To render the stretching more effectual, the top bars run loose, being formed with a right and left handed screw, from the centre toward the ends, so as to pull the cloth out as it passes over. The beam has an adjustable brake, to prevent over-running and ensure tautness, as it reaches the cutter. On leaving the beam, the fabric passes round a number of guide bars to the guide plate, thence to the rapidly revolving cutters.

The machine can be driven by hand or power, from the central driving shaft, by trains of wheels to the cutters, drawing rollers, and the flange beam for receiving the strips of chenille, the wheels being proportioned to keep the strips taut during cutting and winding. In connection with the driving pulley is a clutch and clutch lever, to start or stop the machine, when being driven by a strap.

Finishing Piece Dyed Worsteds.

II.

Continued from May.

After the goods are entered in the washer, they should receive about three barrels of warm water to a set of 4 pieces, running in this about 10 minutes.

Then draw off this liquor, add 3 more barrels of warm water and let them run in this 20 minutes more. Afterward turn on cold water and rinse them for 35 minutes. After letting the goods drip a few minutes shut the gates and give them 8 pails of a solution of fuller's earth made as follows: To a barrel water add two pails full of refined fuller's earth, see that it is well dissolved by keeping it stirred. Always stir well before using it. Let the goods run in this for 15 minutes and then rinse for 10 minutes, when they are ready to come out of the washer.

Take them at once to the rolling and stretching machine, roll them tightly and lay them down flat. In two hours they will be found sufficiently drained to be taken to the steamer where they should have a thorough steaming. If the cylinders of the steamer are large enough, it is advisable to steam the four pieces that were washed together at the same time.

When the goods are tightly rolled on the cylinder and firmly secured to prevent shifting, turn the steam on gently until it makes its appearance on the outside of the covering; then turn on the full valve and let the steam remain on seven or eight minutes. It is well to have the cylinder revolve all the time as there is then less danger of water marks, due to the water settling at the bottom and producing dark places.

As soon as the steam is turned off, the water is turned on until the goods are wholly cooled. Then run the goods on the other cylinder and repeat the operation as on the first cylinder. After this fold them on a truck and they are ready for the dye house.

When they return from the dye house they are again to be run in the washer and cold water turned on for 20 minutes, after which give them another dose of fullers' earth. They are then taken out, thoroughly extracted and dried. After drying take them to the steam brush, give them a thorough steaming and they are again ready for the singeing process. Here again the usual mode of procedure is departed from, in that, instead of shearing the goods they are subjected to another singeing.

If the first singeing has been properly performed there should be little fuz to take off, although the goods have been in the mill. The fulling they received cannot properly be termed fulling, for it is simply the starting of the grease, which is performed with less trouble in the mill than it possibly could be in the washer, besides aiding the soft feeling.

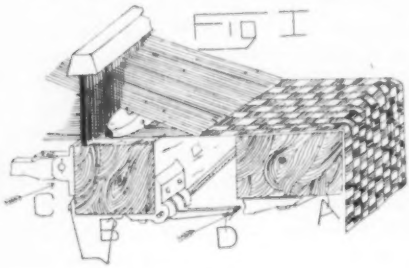
After finally singeing the goods take them to the steam brush and let them run around two or three times with a fair head of steam, but be sure the brushes strike the goods lightly. They are then ready for the press on which they are treated face up or next to the roll, with a moderately hard pressure.

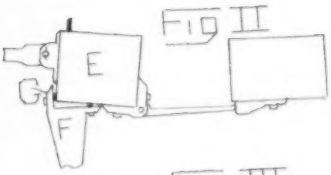
Another steam brushing brings them to a point where they will be sure to give satisfaction on the market. After the final steam brushing they should be inspected, measured and rolled up.

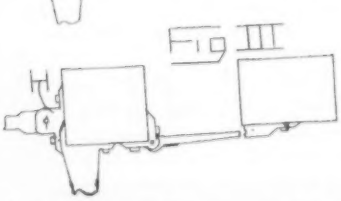
Loom Fixing.

For the Textile World.

Some years ago, one of the best loom building works sent out a loom which has given constant trouble to fixers, owing to the singular arrangement of the dagger, and protecting rod parts and connections. The line from the point of the dagger, and the place it strikes the shipper shifter, beneath the breast beam, is above the level line of the tops of the parts that retain the







lathe to the swords; consequently every blow of the dagger against the protection, serves to strain the connection between the swords and the lathe. The result is, that the bolts holding the swords and the lathe together, very soon become weakened, and unless strengthened, will snap off.

When broken, considerable trouble is experienced in getting the parts into running form. As the peculiar adjustment which causes this trouble is not readily traced, it is seldom that anything is done about the matter until the parts separate, and the loom stops. Skilled fixers will easily detect the trouble when it first starts, and will remedy it by tightening bolts, and securing parts; but others must wait for evidences of trouble before being able to place hands upon it.

An observation of the cuts will present to the reader the reason of the weakness, and also show how the trouble may be obviated with implements at hand. In Fig. I. is presented a sectional view of the woolen loom in question. A marks the breast beam, B the lay, C the crank arm, and D the dagger. It will be noticed that the place where the bearing of the crank arm is fixed to the rear of the lay, is higher than the point where the dagger strikes the protection under the breast beam. When the shuttle trips in the shed, the lay is pushed forward until the dagger protects, and the force of the lay and the momentum of the loom causes the crank arm to continue pushing for a second or so.

This power is brought to bear upon the upper part of the lay, while the protection power holds back from the lower part of the lay. This gives the lay a twist every time the loom protects. Sometimes the shipper fails to get the belt on the loose pulley quickly; in this case, the strain is very severe upon the lay, for the belt will keep forcing the lay forward, and much of the power will be received upon the point of the dagger, and the lay will be wrenched. After these looms have run for a year or so, the connecting bolts between the under part of the lay, and the rest on the swords, begins to give out. They loosen, as shown in Fig. II, in which E illustrates the lay, F the sword, and G the bolt It will be noticed that the lay is tipped forward. The pressure of the crank arm has done this at times when the dagger has been on the protection, in the way shown, and when the belt has clung to the tight pulley for a moment or two.

No loom will run well with the lay in such condition. The shuttle will stagger, the lay being unsteady, bad work will result, as the shuttle is continually coming in contact with the threads in

the shed, producing breakages and the like. Furthermore, when lays get into this shape, there is liability that they will cause the dagger to miss the protection, and shuttle smashes will be frequent. Whatever happens to a loom, however, there is a remedy. Necessity has taught the fixer how to patch up the foregoing defect.

The best way to fix a loom, when the lay gets in this condition, is to spend about fifty cents in having a special part cast from iron. Usually, fixers insert a new bolt, which holds the sword and lay together for a month or more, but as the bolt sooner or later breaks off or springs again, it follows that such a way is not the best. The proper means to overcome the difficulty is presented in connection with Fig. III.

In this drawing, the part to examine is the bearing marked H. This is a piece of metal, specially made to form a substantial union between the crank arm of the lay and the sword. The bearing overlaps both. Thus, if the loom protects, the crank arm pushes up the lay just the same, but the force, instead of being placed only on the upper part of the lay, as in the former cases, is distributed, and made to lodge mainly upon the sword part, giving the blow directly to the dagger and relative parts. A lay fixed in this way will run indefinitely, without loosening at the swords, giving no further trouble.

An Important Business Change.

The extensive business in the manufacture of burr pickers, burring machines, steel ring cylinders, card feeds, picker feeds, etc., conducted for many years by E. R. Parkhurst, under the name of the Atlas Mfg. Co., Newark, N. J., has been purchased by a corporation, which, having acquired all patents, rights, titles and good will, will continue the same under its former title.

The new Atlas Mfg. Co. was incorporated in May, 1895, with Wm. H. Hassett, president, and L. F. Dickerson, secretary and treasurer. Mr. Hassett is well known in the textile trade as a practical mill man, whose long experience fits him to understand the requirements of mills, while his knowledge of machinery enables him to avoid in construction many faults which a less practical manufacturer might adopt.

Treasurer L. F. Dickerson is no less well known throughout the mills, having been treasurer and general manager for the Atlas Co., entering the employ of the late S. R. Parkhurst many years ago, as confidential clerk. Mr. Parkhurst's ill health and extreme age finally necessitating his giving up active work, the whole management and responsibility of the concern was assumed by Mr. Dickerson, whose success is demonstrated by the extensive business now conducted by this company.

The company has been very fortunate in securing as superintendent, Mr. Chas. D. Walker, of Massachusetts, a thorough practical machinist in all that implies. His long and close connection with the manufacture and erection of textile machinery in the best shops in the country, insures to the new firm the most careful attention to all details of construction, which fact will certainly be appreciated by its patrons. Mr. James D. Jamieson, for many years in charge of the office, has been retained, and all visitors will meet with the same unvarying courtesy and cordial treatment which has always been a pleasant feature at the Atlas Works. The company will soon extend its business to the manufacture of other special lines of machinery.

Plush and Velvet Power Looms.

It is stated that M. Faure, an Austrian manufacturer of plush and velvet power looms, has the whole of his cutting apparatus made of aluminum, which, it is found, possesses various advantages, chiefly, lightness and strength. In older methods, it is remarked, the weight is disagreeably perceptible, the speed of the apparatus being considerably interfered with, as well as its stability—drawbacks which have repeatedly led to unsatisfactory results.

The apparatus previously in use worked backwards, with the help of an endless catgut string, being thus exposed to severe shocks. It was, therefore, found advisable to abandon iron and steel, and resort to hard wood. While the weight was diminished in this way, it was still too great, the parts easily altering their position and shape, and soon wearing away. Aluminum, it is asserted, obviates all these defects.

M. A. FURBUSH & SON MACHINE CO.
MAKERS OF
WOOLEN MACHINERY,
THE MURKLAND INGRAIN CARPET LOOM,
224 MARKET ST., PHILADELPHIA.
WRITE FOR NEW CATALOGUE.

THE American Napping Machine Co.,

Owns the Principal Patents

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American Soap & Washoline Co.,

Manufacturers of

Textile Soaps

For use in the Manufacture of

Cotton, Linen, Silk, Woolen, Worsted, Hosiery and Flannel Goods, also Soaps for washing Paper Makers' Felts.

We make a specialty of **Washoline**, a powdered soap for use in textile mills, which is meeting with decided success in many departments.

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Dealer in and Grower of

TEASELS.

Clipped and packed to any desired size.

Teasels are grown, cured and packed on own premises.

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Offer the best quality medium sizes, most evenly assorted, at the lowest prices in the market. Satisfaction guaranteed. Business established in 1832.

WM. W. KELLOGG,

SKANEATELES, N. Y.

AMERICAN TEASELS

High Grades a specialty.

Sample Orders Solicited.

Combined Napper and Gig.

The Parks & Woolson Machine Co., of Springfield, Vt., has abundant reason for feelings of gratification, at the receipt of the following letter, from C. W. Springfield, of the Alfred Woolen Mills, Alfred, Me., dated April 30:

"With this, please find check, in payment for combination napper and gig. This should have been paid before, but owing to our having to make so many kinds of goods, and awaiting the approval of the members of our house, I have been awaiting the verdict. I am much pleased to state that we have the best machine that has ever been built for blankets, and we have a line of goods pronounced to be the best finished on the market, therefore, I am feeling quite jubilant, and shall use every effort to induce my friends in the blanket business to purchase your napper. Have already had a number of manufacturers here, and they all agree that we have the best machine they ever saw. We will return the canvasses to you, freight prepaid, and I reasonably expect that you will hear from some of our friends, in the near future, about your machine. Trusting that you will be as much pleased with the result as I am, I remain."

The front cylinder of this machine, patented by Adna Brown, president of the company, is a regular napper, the back cylinder a regular teazle gig. Both cylinders can be operated at once, or either alone. The mechanism gives a saving of more than half in time, labor and expense, beside giving a superior finish. The cylinders can be operated together, or alone. The machine is so substantially built, as to avoid shaking and noise.

The cloth runs with the cylinders, sprocket wheels and chains carrying the cloth. There are four applications of the cloth to the wire cylinder, and three to the teazle cylinder, the applications being adjustable by means of hand wheels. A dial and needle show the exact amount of napping needful. The ten workers on the napper cylinder are driven by four ropes, two on each end, their speed, with respect to the cylinder, being regulated by two cone pulleys.

The card clothing, with which the ten workers are covered, will not rust, nor will the rollers letting the cloth on and off the cylinders, which are brass-covered on this account. The back cylinder will carry twenty-one improved wood flats, and there is a stretch roll in front of each cylinder.

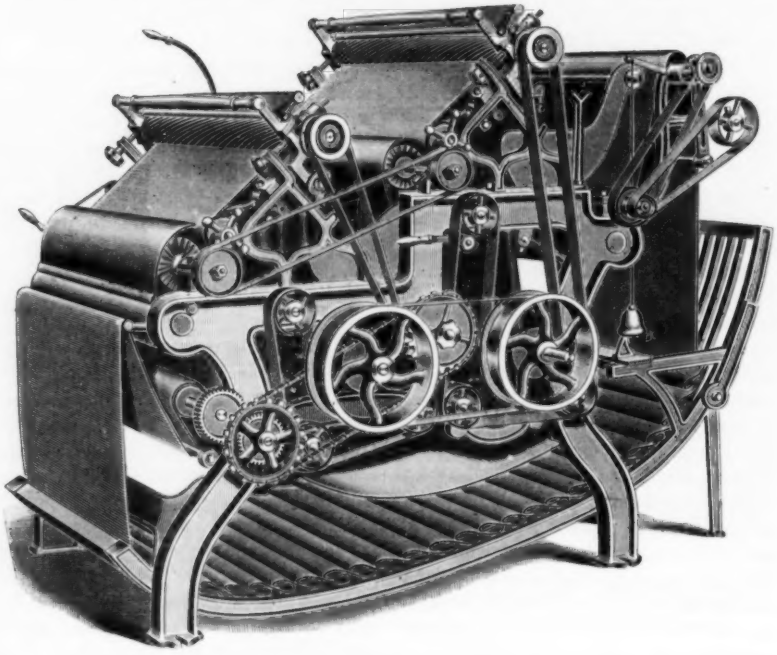
Shuttle Boxes.

A novel improvement in the shuttle boxes of looms, has been made by a London inventor. This mechanism is different from the ordinary shuttle box, because it has no swell or spring, and the shuttle guide, though made somewhat as usual, is mounted at the end nearest to the entrance of the shuttle box on a pin or stud, which acts as a fulcrum; the opposite end of the shuttle guide is free to vibrate, and is formed with a cross piece, the end of which rests against the back of the shuttle box, or against an adjusting screw or nut; thus the vibrating end of the shuttle guide is maintained in the required position by means of a blade spring fixed to the front of the shuttle box.

The cross piece which forms part of the vibrating end of the shuttle guide, is slightly shorter than the width of the ordinary shuttle, and, as the latter enters the box, the vibrating guide acts in lieu of the swell, the blade spring checking the momentum of the shuttle, stopping it. The fulcrum pin of the guide may work in a short longitudinal slot in such guides, the check strap being attached to the guide, the last named or its cross piece, acting as a buffer.

INSINGER & CO., Manufacturers of
LOOMS for RIBBONS, TAPE, BINDING, GORING, SUSPENDER FRINGES, ETC.
JACQUARD MACHINES for SHAFTS, and HARNESS LOOMS.
Lathes or Battons, Straight or Circular Shuttles, 2, 3 or 4 banks.
Nos. 15 to 30 E. Canal St., PHILADELPHIA, near 1033 N. Front St

DOUBLE SHEAR.



Does the Work of Two Shears.

Saves the Price of One Man.

Saves One Half in Time.

This Shear costs less than two single shears; one good shear tender can operate it alone; it will pay for itself.

Illustrated Catalogue of all our Cloth Finishing Machinery sent free upon application.

Parks & Woolson Machine Co.,

SPRINGFIELD, VERMONT.

The Bates Feed.

The Bates improved feed is built with metallic feed rolls and metallic licker-in, The licker-in is attached to the feed. which is constructed with side plates, keeping the drawing straight on the outside edge, and with the metallic feed rolls and metallic licker-in it combs the double out before it reaches the main cylinder. By so doing, it is claimed to make the outside ends as perfect as any end on the card. There is no side strap to break and run in the card, and no extra card clothing to buy, making the feed complete when delivered. By taking off the two outside rings and setting the rings flush with the edges of the cylinder, as when set for using creels on the finisher card, the production may be increased from 20 to 30 per cent. It is known that with some feeds there is ten to twelve per cent. of the stock coming through the finisher which is not spun into yarn, but must be returned to the first breaker and carded over again, making extra work for the breaker cards, besides cutting up the stock; there is also much stock dropped on the floor on each side of the card, caused by the drawing strands being laid uneven on the ends at each side. In the Bates feed that defect is overcome; there is no latch on the ends to hold the drawing and cause the rolls to pull the drawing, causing thin places and uneven work. The drawing is pinched between the rolls, which come close together, and always run the same way, consequently there is no strain on the drawing after it passes through the rolls and is laid on the feed apron. The one superiority claimed for this machine is in the improvement of the ends. It is obvious that a machine that will lay the drawing naturally without any strain after laid on the feed apron, will produce the earnest work.

E. V. Bates, Dracut, Mass., is the builder.

A New Fulling Machine.

A new fulling machine has been contrived by an English inventor.

In this apparatus the usual spout and lids of such machines are used, while on the two inner sides and bottom of the spout, also on the inner side of the lids, are projections in alternate positions, or opposite each other, as may be required.

Where fixed projections are used, they may be of the same solid material as the spout and lid, or separate pieces secured to the inner side of the lid, and to the inner sides and bottom of the spout. Or, if the projections are of a movable character, they are attached to, and actuated by the spiral springs or tappet motion. The material of these projections may be wood, metal, glass or other substance, and of a pattern similar in shape to a Grecian ogee door moulding, this form having been found to give the best results.

Lustrous Stripes.

An improved kind of cloth is described in a foreign exchange, the improvement pertaining to such materials as woolen or mohair warp, and worsted and other yarns having a lustrous effect, either in single or two-ply.

These are arranged alternately, in sections, the number of ends of each warp being determined by the width of the stripes or patterns to be produced, their distribution through the harness also depending on the nature of the design.

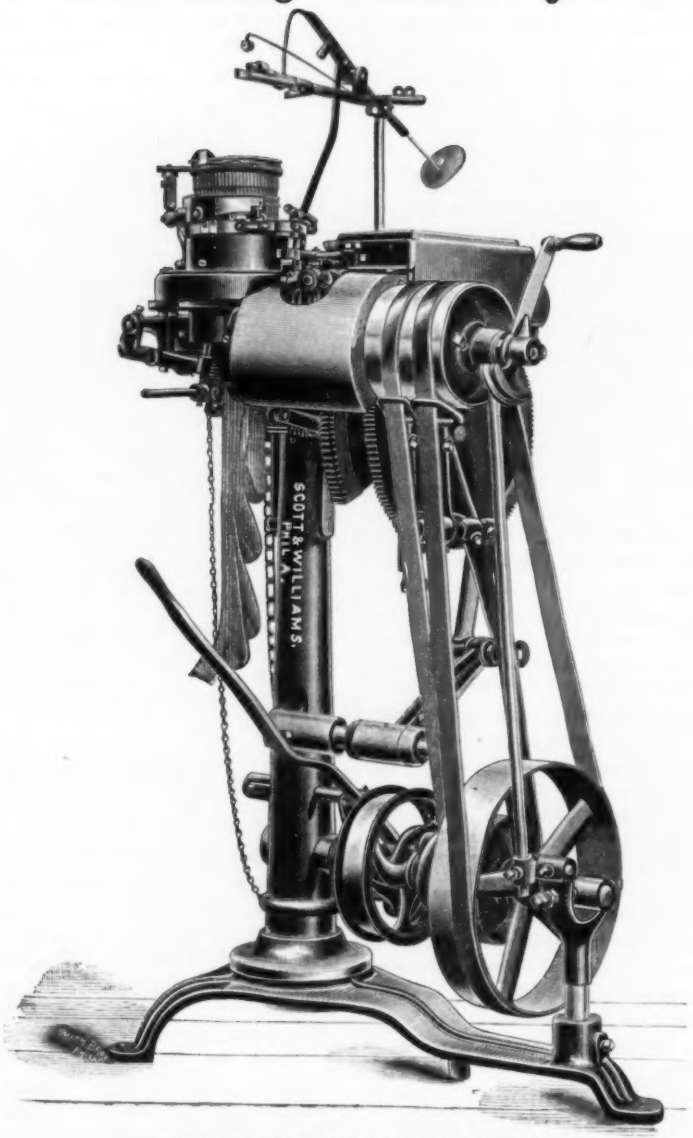
The construction of the cloth, as regards the woolen or mohair warp, is ordinary. The worsted or lustrous warp, however, is woven to, or secured by the fulling being floated over one or more ends of warp at intervals in each section. In this way the warp is brought prominently to the surface of the cloth, while so little filling appears, and that only at intervals, it is scarcely noticeable in the pattern formed by the alternate sections of lustrous warp.

When the fabric has been passed through the finishing process, the stripes have, or the pattern has, an attractive lustre, in strong and agreeable contrast to the dull woolen face. The warp may be single or double

SCOTT & WILLIAMS,

BUILDERS OF

Knitting Machinery.



AUTOMATIC SEAMLESS HOSIERY MACHINE.

GENERAL OFFICES AND SHOW ROOMS,

Knickerbocker Building, Cor. 6th and Arch Streets, Rooms 3, 4 and 5, Philadelphia.

WORKS: 2079 E. CUMBERLAND STREET.

KNITTING DEPARTMENT.

Automatic Seamless Hosiery Machinery.

That the production of circular seamless hosiery is rapidly on the increase, is a fact which no one can successfully dispute. This production is increasing in England and other European countries, in almost as great a ratio as in this country. Scott & Williams, the well known knitting machine builders, of Philadelphia, early in the days of automatic seamless machinery, fully realized the importance of distributing machines of this character in England and continental Europe. Messrs. George Blackburn & Sons, of Nottingham, England, were selected as a concern specially adapted for the construction of machines, and their output at the present time includes two distinct types of full automatic machines. One is specially adapted for the making of half hose and work necessitating transfer operation; the other is peculiarly fitted for the manufacture of women's hose.

Messrs. Scott & Williams have recently made some very important improvements in connection with their No. 2 full automatic seamless machine, several being of a structural character, but the improvement which will create the most interest, is one permitting the production, in any form, of a seamless stocking, of a double sole and high spliced heel, and, wherever necessary, re-enforced or double knee.

Machines fitted for this purpose have been at work in England for several years, so the test of time has been applied to the system. In the mechanism about to be described, however, mechanical methods exist in the direction of simplifying and broadening the scope of the device.

Heretofore, in all machines where special splicing or re-enforcing has been attempted, it has always been deemed necessary to revolve the bobbin carrying the re-enforcing or splicing thread, as, for instance, on some of the best known types of ribbed frames of to-day. While this method may be considered to be practicable with respect to its use in connection with ribbed machines, it would be far from satisfactory in connection with the modern high speed automatic seamless hosiery machines. The device, as embodied in the Scott & Williams machine, obviates the necessity for the rotation of an auxiliary or splicing thread bobbin, by a most ingenious arrangement of thread controlling the mechanism.

At a point to the rear of the centre of the machine, about twelve inches therefrom, and to the right of said centre some six inches, is fixed a stud or post, maintained rigidly in parallel position, with an imaginary line drawn through the centre of the cam cylinder. Pivoted on the upper end of this stud or post, and free to vibrate thereon, is a lever, which, at its outer end, is provided with a stud, which, in turn, carries another lever by a pivoted connection to said stud. The other end of the last described lever, has a loose connection through a stud on the yarn guide. This last stud is made hollow, so that the thread may pass through during its passage from the source of supply to the needle. Upon this lever is a clamping and releasing device, which, together with the lever last mentioned, revolves with the movement of the cam ring, or reciprocates with it, as the case may be. The clamping device referred to, is controlled by a pattern chain, through the agency of a pin wheel and a cam motion of extreme simplicity. The operation is:

Assuming the stocking to be started at the toe, a high link is presented at

the proper juncture, which releases the clamping mechanism and accordingly permits the splicing thread to pass freely to the needles, where it is incorporated, along with the main or knitting thread in the toe. Immediately upon the completion of the toe, another link in the chain, of modified form, acts upon the clamping device in such a way as to close it at a certain part of the circumference of the needle cylinder, in practice being at that part where the toe begins and ends. At the completion of a half revolution, or when the thread reaches the other side of the toe, the mechanism forming the clamp is released, so that the splicing thread is again allowed to pass freely into the

body of the fabric, and to be incorporated therewith. These alternating changes, releasing and clamping, are affected at each half revolution of the machine, with the result that the splicing thread is introduced at one side, and taken out at the other, until such a time as the machine is ready to change to the knitting of a heel, when, again, a link of proper form acts upon a mechanism, and releases the thread, so that it is incorporated with the main threads in the knitting of the heel. After the completion of the heel, the same operation takes place; that is to say, the thread is alternately inserted and extracted at each half revolution, for the space of two or three inches above the heel.

The effect of all this is that the stocking has been made with a thickened part above the heel and a thickened sole, while the front part of both foot and ankle are left of the ordinary texture. Where children's stockings are being made continuously upon an automatic machine, it is possible to so arrange the mechanism as to re-enforce the knee part, as well as to make the double sole and high splicing.

There is reason to believe, that the application of mechanism of this sort to a machine of such high character as the Scott & Williams machine, is sure to still further broaden the demands for seamless hosiery, and we look forward to seeing still greater inroads being made into the waning demand for imported fashioned goods.

It must be understood, further, that the foregoing description cannot, in the very nature of things, in the absence of drawings or diagrams, be expected to do justice to the mechanism. All interested, however, may rest assured, that very little mechanism is added to the machine, and that the device will perform its operation with the utmost accuracy.

The question of an automatic seamless machine is at the present time in a peculiar state, owing to the difficulty of a certain class of manufacturers, in deciding as to the relative merits of a full or partially automatic machine. As a matter of course, the first outlay is much greater in the case of a full automatic, than it would be for a three-quarter automatic. Whether or not, the additional outlay is justified by the decreased cost of production, is a question that time alone will decide. At any rate, it seems evident that the demand will exist for the cheap and partial automatic machine.

With this thought in mind, Scott & Williams have recently embodied, in a three-quarter automatic machine, most of the essential features of their well known No. 2 full automatic.

Many movements and mechanisms are of course discarded, the result being an extremely simple machine. In this machine, very few stops and chains are necessary to the mechanism for controlling the successive throwing out and in of the needles, which is free from any danger of derangement. The cam system employed in this machine, is substantially the same as that used in their No. 2 full automatic, and practically the same as that employed in the best known types of hand seamless machines. No form of pivot tumbler cams are present, which are a constant source of annoyance. All mechanism for controlling the movement of the needles, apart from the cams for the plain knitting, are contained outside of the cam ring, and the motion is applied directly in a line with the movement of the needles, so that no side strain, is brought to bear upon the needle butts.

The claim is freely made, that this machine will make more and better work, and break less needles than any other of its class. The machine is on exhibition at the show rooms of Messrs. Scott & Williams, 6th and Arch Sts., Knickerbocker Building, Philadelphia, where it can be seen in operation at any time. The high splicing mechanism

referred to, is attached to either the full or three-quarter automatic machine, and is equally effective in either connection. It might be interesting to state that Messrs. Scott & Williams have recently received from their clients abroad, a complete and interesting line of British made seamless hosiery, comprising a large assortment of colors and styles. These are also on exhibition at their offices, and it will surely repay any interested manufacturer to make the concern a visit.

The Knit Goods Situation.

A stuttering market. Such characterization briefly describes the knit goods situation. Hesitation continues to a great degree, and things are about where they were a month ago, owing to the prolongation of nice winter weather.

Not for many years has hope been so long deferred. Of course the freakiness of Old Prob means an almost complete loss of trade on intermediate weights. The minute hot weather comes in earnest, business will take a surprising impetus, but it will only be a remnant, after all. There is so much more money in the heavy weight trade, that heavy weights are sure to get most attention.

The varying aspects of the market are remarkable, just now. It is all in how you hit it, as in the cases of the three blind men of Hindoostan, who encountered the elephant. In some manufacturing places, where part or total restitution of wages has been made, there is more money in circulation, and somewhat better grades of goods are called for. This improvement has already extended to jobbers, in the larger centres.

On the other hand, retailers in places like Boston, find more of a leaning than ever toward cheapness. This manifestation is peculiarly significant, as it is principally reported among caterers to the best trade. So pronounced is this tendency, that dealers have ordered more medium quality goods than ever before, for the early Southern and Western trade coming from buyers on their way home from Eastern summer resorts.

There is plenty of price shaving going on in a quiet way, although quotations are nominally from five to ten per cent. higher, along pretty much the whole line, and salesmen talk stiffness in a confident way that carries a certain amount of conviction. Nevertheless, while there are elements of some strength in the market, the recent advances in cotton are largely the product of bull determination.

The hand-to-mouth methods which are now uniformly, if not universally, in vogue, have afforded a drizzling trade, which, with briskness in specialties, such as sweaters, golfing stockings, etc., has brought the volume of business to a respectable total. Ribbed underwear is easier, proportionately, than other lines. Not that there is any dimunition in demand, but so many manufacturers have gone into that line of production. Any continued call for popular lines of hosiery will speedily clear out stocks which have been allowed to dwindle, owing to the unprecedented conditions.

The "Standard B" Knitter.

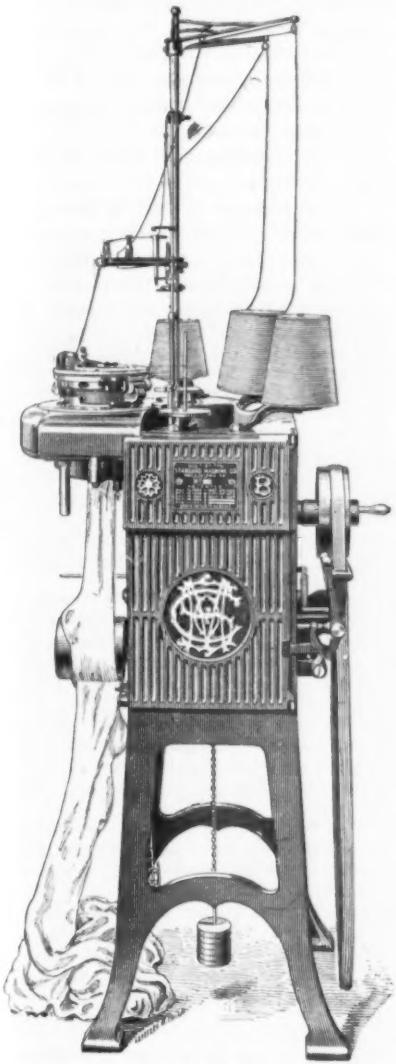
Inventive genius has played its part in the production of the new knitting machine illustrated herewith, and recently introduced to the public by the Standard Machine Co., Philadelphia.

The Standard Co. has been proverbially successful in giving the knitting trade acceptable machines, the result being that its full facilities have been continually drawn upon. This last machine, however, is considered its greatest triumph, and the highest achievement to which the inventor has yet urged his genius.

In the face of what already seemed ample success, Harry Houseman, of this company, conceived the idea of developing a high speed, light motion knitter, capable of greater work, and possessing a unique mechanism. That he has accomplished this end, there can be no doubt.

An eye witness to its operation must concede to the builders all the claim as to mechanism, speed and accuracy, and be pleased that ingenuity can reach such a climax.

"Three main thoughts," said Mr.



Sprowles, of the company, "dominate in the construction of this machine—substantiability, lightness of running, and ability to produce large results. Our machine appeals to expert and novice alike in its strength of construction." The machine is prettily designed, and when under full headway is interesting to witness. Light running is a positive feature, a 3-4 belt only being needed to operate it at any speed. The output, for the class of work, is another strong point. With 176 needles, 3 3-4 head, an output of 4 1-2 dozen pairs of hose per day can be reached. We were shown the product of five hours work at that rate. In a casual inspection of 2 1-2 dozen women's hose, we discovered only three menders.

The company states that the knitter is receiving strong endorsement, and that within the briet time of its introduction, fully 400 have been ordered. At its show room, 508 Minor St., Philadelphia, the Standard Machine Co. will show the machine in operation, and furnish any information not in its card, found elsewhere in this issue.

Fixing Knitting Machines.

SOME CAUSES FOR BAD WORK ON THE CIRCULAR SPRING NEEDLE MACHINE.

The causes for bad work on this class of machines are many and varied. First, take the matter of holes in the fabric, which appear frequently. When caused by poor yarn, it is readily detected. An examination of the sides of the hole will generally show the fixer the cause. If the ends of the broken thread at each side are fine, it is evident that a twit (fine place in yarn) caused it.

The only thing to do, in such cases, is to run as light tension on the cloth as possible, and the cast off wheel as low as it will cast off the stitches. It would also be well to let the carder know there are fine places in the yarn, if the mill makes its own yarn; if not, notify the yarn manufacturer. If one side of the hole shows a clean cut, and the other side a knot, it is plain the winders are making too large knots. A square knot, or a weaver's knot, are the best.

If both sides of the hole show a clean cut end, look for some cause other than the yarn. Either feed of the machine may have cut the yarn; to determine

which feed, count the number of stitches knit since the hole was made. This is easily done by counting the unbroken threads at the bottom of the hole, beginning at the needles and counting upwards, allowing as many threads for a revolution, as there are feeds to the machine. This gives the number of revolutions the machine has made since the thread was cut.

Suppose there are four feeds on the machine, and five unbroken threads, or stitches, below the broken thread. It is evident the machine has made one revolution, which would explain four of the unbroken threads. Two are left over; one unbroken and one broken. Now, count two feeds backwards, and find the second feed from the hole; cut the thread. Look at the stitch wheel and see if a blade is bent; notice if the wheel is set at the proper angle, and enters the needles without striking. If this wheel is all right, look further.

If you are using a dividing wheel, look at that. See that it does not enter the needles further than the length of the loop or stitch formed by the stitch wheel. If that is all right, observe the cast off wheel, which, if set too high, or rough on the top of the blades, will cut holes. This wheel should be absolutely smooth, and should not be set higher above the tops of the needles than the length of the stitch. If, after an examination of these three wheels, the cause of the hole is not found, look at the landing wheel.

As the landing wheel on this feed does not come in contact with the stitch made on this feed, turn to the landing wheel on the feed ahead, and see that it is smooth on top, and that none of its blades are bent. A bent blade in a landing wheel will make a hole. See that it is set at the proper angle and does not set too deep in the needles; also, observe that the presser does not ride on top of the blades, and that the presser is not rough on the bottom. After looking over all the wheels coming in contact with the yarn on the feed counted, without finding any evidence of roughness or improper adjustment, the machine should be started.

If another hole appears which counts the same, the wheels should all be taken off and given a rubbing on a brush made for the purpose. Some mills have a piece of card clothing tacked on a narrow piece of board. A better and quicker device is a brush wheel, with long, fancy clothing attached. It is run at brisk speed, and should be located near the knitters. A couple of holders for the wheels should be made, as they facilitate brushing.

A straight piece of steel or wrought iron, about 10×1×1-4 inches, will answer. One end is drawn to a point, to fit in a handle; the other rounded a little, and a hole drilled and tapped for the stud in the centre of the piece, 1-2 or 3-4 inch from the end. One of these holders should have a small stud screwed into the hole in the end, the other a large stud, to hold inside and outside wheels. With these holders it is the work of only a few minutes to smooth a whole set of wheels. It is a good idea to have a bristle brush on the opposite end of the arbor, to clean the wheels when they become clogged with flyings; also, to polish and clean the wheels, after brushing on the wire brush.

After the wheels have had a thorough brushing and cleaning, and before they are put back on the machine, the studs on which they run should be well cleaned and oiled. There is one other wheel which should be looked to, in case the machine makes holes—the clearing wheel, which will occasionally cause a hole. This wheel should be set so that it does not come in contact with the stitches.

It sometimes happens that the horn, or pushdown, is set a little too high, and the clearing wheel, as it has a downward movement, comes in contact with the stitches formed on the preceeding feed. If the bottom of the blades are rough, they will sometimes cut on the horn, and may make holes. A rough needle, a twisted needle barb, or a small part of the barb broken off, will also cause holes. These troubles, however, can readily be detected, as they appear in a vertical line in the cloth. Almost all holes are caused by improper adjustment, roughness, or bad needles. There are other causes for bad work, even worse than holes, which I shall make the subject of my next article.

KNITTER.

Look to Construction.

For the Textile World.

Manufacturers contemplating the purchase of knitting machines, automatic, semi-automatic or otherwise, should not ignore their construction. Looking at a machine while it is in operation and examining its product is not sufficient; the state of the art is now so far advanced as to necessitate considering the life of the machine. Its general appearance should be taken into account. The general appearance of a garment is commonly indicative of its character throughout, and the same rule often holds good in machinery.

One essential consideration is the quietness and ease with which its movements are performed. The gear wheels should ordinarily be cut, not cast; its moving parts well balanced, its shafts and bearings true.

Allow me to give a little index: if, in looking at the ends of the shafts, you find only a centre punch mark from which they have been turned, it would be safe to pass by that machine, as no thorough mechanic would construct work that way. The centres should be drilled and countersunk, full and round, at an angle of sixty degrees.

The machine should be reasonably well finished. A high polish does not necessarily mean a good finish. Deep scratches and a high finish are to be avoided. A good finish would be where the tool marks were removed and the grain of the finish uniform, and running only one way. Some one may say:

"Well, I do not care for finish. What I want is results."

You are more likely to get the best results when you have the finish; as a rule they generally go together.

The machines should be made from suitable material. This is a matter in which one has largely to depend upon the reputation of the builder. It is hard to judge of the material unless it is so bad as to show blow holes in the cast and seam of the wrought iron parts.

The cylinders should be made from tough steel, solid, that is, from a piece forged out of solid bar without a weld. There is a Philadelphia firm which has invented a process for manufacturing such cylinders. The needle cam should be made of tool steel, and should be the exact curve of the cam cylinder. They are better if ground out after being fastening to their seat.

A number of manufacturers still persist that first-class hosiery will not sell; at least they cannot get their price for such goods. I fail to see many efforts in that direction. The fact remains that better work is in demand, and unless goods are made as well as the imported article, Americans cannot keep the market, although they have the necessary machinery. It requires three distinct machines to make the best imported goods, yet many American manufacturers say they cannot afford to use more than one. GIRBONS FRAME.

New Method of Inserting Sleeve.

Marked success has attended many of the recent efforts to produce goods with some special feature of cut or seam to recommend them. One of the new schemes of this sort is a seam by which the arm of the vest at the shoulder is made to adjust itself automatically to any size. Instead of the old-fashioned straight seam, the upper part of the sleeve is cut V shape and carried nearly up to the neck. This permits an elasticity not otherwise obtainable, and does away with the gusset under the arm, used in all other makes. It also gives an elasticity over the bust, ensuring a comfortable fit to the entire garment, doing away with the old time binding and friction.

—The Manufacturers' Record, of Baltimore, made its issue of May 31 a special cotton mill edition, covering the Southern factories with great completeness. Among the long list of distinguished contributors secured by Editor Edmonds, is D. M. Thompson, president of the Corliss Engine Works, and A. B. Shepperson, the cotton expert. The number is finely illustrated, and does the Southland credit. Every mill man will want a copy.

POWER DEPARTMENT.

O. R. YOUNG, M. E., Editor.

Electrical Driving of Textile Establishments.

Abstract of a paper read before the New England Cotton Manufacturers' Association, of Providence, April 24th, by Sidney B. Paine, of Boston.

In consideration of this subject, it must be borne in mind that the electric generator, so called, does not generate, or rather, does not originate the energy. Power must be applied to it from without.

It receives this in the form of mechanical energy, and transforms it into electrical energy. This is transferred in its new form, by means of conducting wires to the motor, where it is retransformed, and appears again as rotary motion, to be applied to driving machinery, either directly, or through small shafts or belts.

The electric system, therefore, is simply a means of transmitting power from its source, to the point of application, replacing, in a greater or less degree, mechanical methods, such as belts, ropes, gearing, shafting, etc.

In the erection of a manufacturing plant in which mechanical methods only are employed, the engineer is confronted by many distinct and separate problems. If steam is the motive power, he must decide upon best location for receipt of fuel, provide for an adequate supply of water for steam and condensing purposes, the economical disposition of ashes, for solid foundation for engines, boilers and chimney, must see that the engine room is placed as near as possible to the manufacturing building, and so located that power may be delivered at the proper point, and at right angles to the main shafting.

If water wheels are to be used, the engineer must determine the best location for the dam, consider the question of foundations, flowage, and head of water. He must enter the canal at the most advantageous point, and make it as short and direct as possible. Must secure a suitable mill site adjacent to the canal, erect buildings on solid foundations, and provide for receipt of supplies and the shipment of goods.

The most economical plan of transmission and distribution of power must be determined, which, theoretically, should be applied nearly as possible at the centre of the machinery to be driven; with mechanical systems, all angles and turns in the line of transmission should be avoided, otherwise wasteful and cumbersome appliances must be adopted. In locating machinery, the direction of rotation must be borne in mind, or cross belts will be required. The possible enlargment of the plant should also be considered.

With these two mechanical systems, the engineer is unable to study each one of these questions by itself, and adopt the plan which in each particular instance would give the best results, independent of the other, but must constantly bear in mind, the relation of one to the other, making concessions here, and sacrifices there, in order that the plant in its entirety may be as nearly perfect as possible.

The engineer is not thus hampered when using the *electric system*. The generating station is located where the power may be produced most economically. Independent consideration may also be given to both transmission and distribution, and only such conditions are adopted as will give the highest degree of efficiency.

Within reasonable limits the manufacturing buildings may be located

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It will make your boilers

CLEAN AS A WHISTLE

and keep them so.

Steam Pipe and Boiler Covering; Garlock and Crandall Packing.

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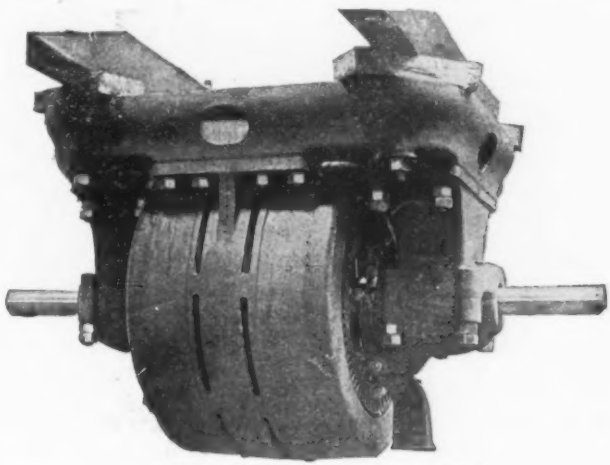
without regard to position of the power house or distance from it. In other words, it is not necessary to subordinate everything to power.

The electric motor is independent of the prime mover, both as to location or direction of rotation. There is no loss by reason of angles in the line of the conductors, as they may be taken around corners or run in any direction, and their position changed at will, while transmitting maximum power, without interference with the service. They will not break down or give away, unless some outside force is brought to bear upon them, neither are they affected by atmospheric changes, as is the case with belting and ropes. There being no movement to the wire, it is possible to transmit power into rooms where it would be impracticable by mechanical means.

The speed of shafting is limited only by considerations of safety, and by the size of pulleys available on machines to be driven, and is determined without reference to that of the prime mover.

The several rooms in a mill may be driven by independent motors, thus permitting the operation of any section, without driving other portions. This provision insures against stopping the entire plant in case of accident in any of the rooms.



A TRIPHASE 65 H. P. CEILING MOTOR.

The generating plant, where size will permit, may be divided into several units, each consisting of a prime mover

and a generator, which deliver their currents into a common conducting wire. In event of accident to any of these units, it will not be necessary to shut down the entire establishment, as the load may be reduced to the capacity of the remaining units, by switching off such motors or lamps, as will least interfere with the general service.

The generators and motors being insulated with the utmost care, offer far less points of weakness than the mechanical system; as a matter of fact, a properly constructed plant will be most entirely exempt from interruption on this account.

The power required to operate any section may be readily ascertained, and, if desired, a continuous record may be kept. Each department may thus be charged with its true proportion of the total cost of power delivered by the prime mover, which is a check against undue consumption of power, by reason of poorly lined shafting or other reasons.

With the mechanical systems, the amount used in each department can only be known after an expensive power scale test, which is of value only as an indicator of power being used at that time.

The limit to which the subdivision may be carried depends largely upon the relative economy of motors employed, and upon the uniformity of the load. By reason of this subdivision, the diameter of the shafting and width of the belting on any section are determined solely by the amount of power necessary to drive that section, and are independent of power required to operate the mill.

An illustration of the above may be seen in the Columbia Mills, at Columbia, S. C., where some 1400 horse power is used. The largest shaft is 3 inches in diameter, and but two belts as wide as 9 inches are used in the entire mill. In the spinning room there is no line shafting, the motors being suspended from the ceiling in the centre of the room, and belted to the counter shafts from which the frames are driven. The room measures 380x102 feet, yet the longest shaft is only 10 feet in length, this being the counter which runs from one beam to the next over the ends of the frames. The ceiling is entirely clear of shafting or belts from this point for the length of two frames, where another motor is suspended with its set of counter shafts. On each end of the motor shaft, two pulleys are placed, and from these, two belts lead in opposite directions to the counters. As these belts are horizontal, all side strains upon the motor boxes are avoided, thus reducing the friction to practically that of the counters alone.

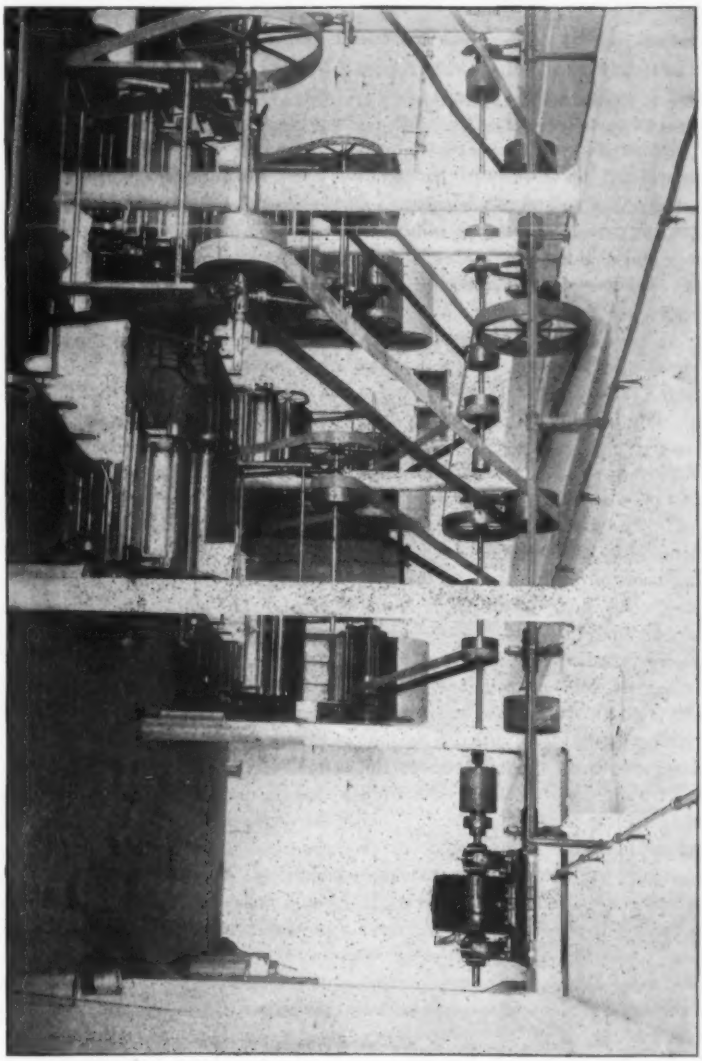
In the No. 4 mill of the Pelzer (S. C.) Mfg. Co., now being equipped with an electric drive, and which will require 2000 horse power, the largest shaft is 2 15-16 inches in diameter, and the largest belt 8 inches wide. In this mill the saving in first cost of shafting and belting, as compared with an identical mill driven by mechanical system, will amount to nearly $10,000.

The electric drive invites concentration of manufacturing buildings at one central point (chosen without reference to the position of the power house). Water powers, more or less widely separated, may thus be brought together for utilization. If steam power is to be used, it is also manifestly more economical to concentrate the building, and to use one large steam plant with interchangeable units, than to use several isolated plants.

On a mechanically driven plant, ordinarily the total power required to drive the shafting and belting is measured, and from this is deducted the loss in the engine or wheel when disconnected from the jack shaft. This method simply shows the power required to keep at speed the hundred tons of shafting and pulleys, and to overcome the friction of shafting revolving comparatively freely in the bearings. It entirely ignores the additional fric-

tion when the main belts are shifted to the tight pulleys. The ratio which the power delivered by the prime mover bears to the amount realized at the machines, is constantly changing, owing to the condition of the bearing, and changes in the alignment of shafting, which is the inevitable result of the settling of the building, and constant vibration and strain, which seriously increases the losses in transmission.

On an electrically driven plant, the actual loss between the generator shaft and the motor shafts remains practically constant under the same conditions of load, and may be readily ascertained. The efficiency of generators, under varying loads, is determined before the machines leave the shops. The loss in the conducting wire may be easily measured, and thus the efficiency of the plant, as a whole, may be



THE COLUMBIA MILLS — PICKER ROOM.

easily computed, and will be found more uniform and nearer the maximum at all times, than on the mechanically driven plant.

The efficiency of an engine or water wheel drops very rapidly as the load is reduced, but a generator or motor loses to a much smaller degree, and the loss on the conducting wire is in direct proportion to the load. For example: If the loss in the wire is fixed at 10 per cent. at full load, the loss at half load, if the voltage at the motors be maintained constant, is only 5 per cent.

In any given plant where the load, voltage and distance of transmission are known, the loss in the conducting wires depends upon their size. This is carefully computed, and is largely dependent upon the value of the power lost therein. If the latter is expensive, a larger wire is used and less power will be lost; if it is cheap, a smaller wire is employed, with a corresponding increase in the amount of power consumed. The most economical point is determined by the relation which interest and cost of maintenance of the conducting wires bears to the value of the power lost therein.

A lower efficiency of the plant when operating at full capacity is, consequently, oftentimes more economical, everything considered, than a higher efficiency, especially in cases where the load is variable, and is at its maximum for only a short period of time.

The application of the electric drive is especially advantageous in machine shops or other places where there is liable to be much idle machinery, as the most economical degree of efficiency may be adopted after a study of the conditions.

In the enlargement of a mechanically driven plant, it is, often, necessary to reconstruct the entire driving arrangements, or erect new, it being generally impracticable to extend the existing system, as the size of the main shafting and belting will not permit it.

The electric system would afford a simple and profitable solution of such a problem. The conducting wires would be led by the shortest practicable route, from the generator to the point where additional power was required. There would be no interference with the existing systems, and no interruption in the operation of machinery already installed.

Having thus compared the electric drive with other methods, let us examine briefly the two systems of electric transmission now in operation.

The use of the alternating current antidates the employment of the continuous current by many years. The revival of the former system for lighting dates back about 10 years, but it was not until considerably later that successful attempts were made to utilize it for driving motors.

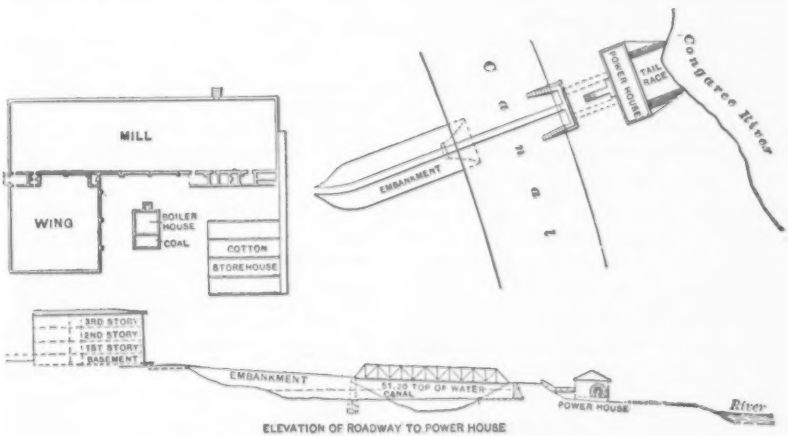
Until that time the electric drive was open to many criticisms. The generator was of the continuous current type, which required the use of a commutator, and care was required to avoid sparking at the brushes. This sparking caused depreciation and heating, and endangered the operation of the whole plant. The alternating current generator does away with this point of weakness.

The distance of transmission was formerly limited, by reason of the comparatively low voltage required at the motors, and for this reason the first cost was, in most cases, prohibitive, where the distance between the generator and the motors exceeded 1 1-2 miles; in addition, incandescent or arc lamps could not be properly operated from the power wires, even at that distance. Today it is perfectly feasible, by the alternating system, to economically transmit the current 25 miles, and use the same system for lights as well as power.

The continuous current motor, like its generator, must be equipped with a commutator, and here was one of the most serious drawbacks to the use of the electric drive, especially in cotton mills. Inattention, which permitted dust or other foreign matter to accumulate un-

der the brushes, caused sparking, with attendant danger of fire.

The regulation was poor, and the speed variation altogether too wide for cotton mill work. By reason of its construction, the motor would burn out if too heavily overloaded. With the alternating current induction motor all this is changed; there is no sparking and the speed regulation is within two per cent. on changes from full to no load. If too heavily loaded, it will stop and wait, without injury to itself, until the overload is removed. No outside starting box is required.



THE COLUMBIA MILLS, S. C. GROUND PLAN.

In addition to the induction motor described, there is also another type of alternating current machine, known as the synchronous motor. It is, to all outward appearance, similar to the generator, and is a most useful machine where strong starting effort is not required, and where brushes would not be an objection. It is especially valuable where exact speed regulation is a necessity. Although separated many miles from the generator, it will run at a uniform speed, irrespective of changes of load, provided the generator speed be maintained constant. As it is designed for the same voltage as the generators, it is not necessary, in a majority of cases, to use transformers. For this reason, and because of its construction, the synchronous motor may be installed, in many instances, at a cheaper first cost than the induction motors.

It has often been stated that the first cost of an electric plant, when added to that of the hydraulic, or steam plant, renders its adoption undesirable, except in a few isolated cases. In any other department of an establishment, the progressive and successful manufacturer does not hesitate to adopt new machines, or substitute improved and modern devices, provided a fair return can be obtained, either in quality or quantity.

Let us assume, for the purpose of illustration, a mill of 65,000 spindles. Assume that each generator is coupled directly to a pair of water wheels operating under a head of 36 feet. To drive and light this mill, the wheels should be capable of delivering 3000 horse power to the generators. This, in many instances, would be sufficient to drive a 75,000 spindle mill, instead of 65,000. The operating cost per yard of cloth would, therefore, be reduced to that proportion. The exact cost of such a plant can only be determined by a study of all the conditions. It would be, approximately, $40 per horse power, or $1.85 per spindle. The interest on this investment would be $2.00 per horse power per year. Any additional help in the power house would probably not exceed 40 cents per horse power per year. In the mill, the shaft oilers clean the motors and fill their bearings when necessary.

The collecting rings on alternating current generators, which have been in use seven years, show little or no signs of wear. If we assume, however, that once in 10 years these rings have to be renewed, the cost per horse power per year will be three cents. Assuming that the brushes will last only one year, the cost per horse power will be one cent.

The bearings are the only other parts where repairs will be needed. These are self-oiling, and consist of removable sleeves. Assuming that these sleeves will last but four years, the cost for renewal on generators and motors would be seven cents per horse power per year.

To light the above mill would require about 1500 incandescent lights, of which 500 would be of 20 candle power, and the remainder 16 candle power. If 2-3 of these would be renewed each year, the cost per horse power per year would be eight cents.

The power house need not be insured, if removed far enough from other buildings so as not to be endangered from fire therein. No fire can be caused from within the structure. The motors and wiring inside the mill should be covered by insurance. If the rate of insurance would be 4-10 of 1 per cent., the cost per horse power would be seven cents.

Allowing 34 cents per horse power per year, for oil, waste and incidentals, we should have, as the total annual cost for operating the plant, for lighting and power purposes, $3.00.

These figures do not cover the cost of generating the energy delivered by the prime mover, as it is assumed that the amount of power required at the wheels would be no greater under the electric system than if the mill was operated mechanically. The purpose of this estimate is merely to show any increase in the operating expense, due to the adoption of the electric system.

In making comparisons of the relative value of the mechanical and electrical systems of power transmission, it would be entirely proper to add the cost of lighting the mill to the operating expense of the former system. Thus, if an isolated electric plant be used, its operating expense, outside of labor and power, would be 25 cents per horse power per year, based on the power required to drive the mill. If gas, costing $1.00 per thousand feet, were used, it would require an annual expenditure of 80 cents per horse power, on the above basis, to light the mill equally well.

The saving in cost of construction, when considered collectively, will sometimes amount to very nearly the first cost of the electric plant. These savings would be made in the foundations of a mill located on solid ground, as compared with the same mill erected beside a water power, in the omission of the canal, in the reduction in shafting and belting, in the construction of the buildings, the omission of a belt tower, and in the lighting dynamos which would otherwise be employed.

In applying these figures, the amount thus saved should first be determined, and be credited to the first cost of the electric plant, and the item "interest" (which constitutes 2-3 of the entire operating expense) should be computed only on the balance.

The additional cost of labor required to operate mills when separated, as compared with the cost for the same mills when located together, may be considered as 5 per cent. interest on the investment. The amount of this investment will materially assist in meeting the first cost of the electric plant.

In the case of the electric plant of the Pelzer (S. C.) Mfg. Co., the annual expenditure for coal required by the engine in No. 3 mill amounted to $10,000. Inasmuch as the steam for heating and slashing is supplied by boilers in No. 1 and 2 mills, the entire cost of fuel now used in No. 3 will be saved by the substitution of the synchronous motor for the engine. This saving will more than equal the entire operating expense (including interest) of the electrical plant, driving both Nos. 3 and 4 mills, and lighting the latter. In other words, the cost of power for these two mills, and the cost of lighting one of them, would be no greater than if the engine had been retained in No. 3 mill, and No. 4 mill had been located adjacent to the water power, and been driven therefrom mechanically. All advantages of concentration, subdivision, better transportation facilities, better light and ventilation, are obtained without adding one iota to the cost of manufacture; in fact, these advantages must result in a very material reduction in such cost.

The Pelzer plant is only one of many installations which might be mentioned, including the Ponemah Mills, at Taftville, Conn., the Columbia Mills of Columbia, S. C., which we illustrate, and many others, where electric power installations are an unqualified success.

Water Power and its Development.

Abstract of a paper written by Col. Samuel Webber, C. E., for the N. E. Cotton Manufacturers' Association meeting, at Providence.

Water was put at work in New England at a very early date, as will be seen by a copy of the first patent granted in the New World, March 6, 1646, by the General Court of Massachusetts, to Joseph Jenks, superintendent of the Saugus Iron Works.

"JENKS MONOPOLYE."

"At a general court, at Boston, the 6th of the 3rd month, 1646."

"The Courte, consideringe ye necessity of raising such manufacture of engines of mills to go by water, for speedy dispatch of much work, with few hands, and being sufficiently informed of ye abilities of ye petitioner to perform such works, grant his petition."

("Yt, no other one shall set up, or use any such invention or trade for 14 years, without ye licence of him, ye said Joseph Jenks), so far as it concerns any such new invention, and so as it shall be always ye power of this courte to restrain ye exportation of such manufactures, and ye price of them to moderation, if occasion so requires."

We find water applied to manufacture of cotton by Samuel Slater, at Pawtucket Falls, in 1790. The Papau River, at Paterson, N. J., seems to have been the next water made available for cotton spinning; but small powers all over New England, New York and Pennsylvania were rapidly taken up, until in 1821 we came to the bold step of employing the Merrimac River, at Pawtucket Falls, in Chelmsford, now Lowell. Fall River, or the Quequechan, was, however, utilized by the Troy Mfg. Co., in 1813.

The original suggestion of the use of the Merrimac River was made by Ezra Worthen, of Salisbury, and Paul Moody, of Waltham, to Messrs. Nathan Appleton and Patrick T. Jackson, who, satisfied with the success of the mill at Waltham, were looking for an opportunity to manufacture cotton on a larger scale. Messrs. Worthen and Moody were both engaged in the promotion of Lowell, one as agent of the first mills, "The Merrimac," the other, of the machine shop.

A canal, with locks, had been built around Pawtucket Falls, for the purpose of navigation, and it was this canal that Mr. Worthen proposed to make available. As originally planned, it left the Merrimac above the falls, came on the present lines to swamp locks, near the Lowell machine shop, where there was a drop of 13 feet, and then followed the present line to the lower locks, back of the American House, where the drop of 17 feet was discharged into the Concord River.

This, for the old style breast wheels, was very satisfactory, and was employed in the development of the power, by cutting a canal from the basin, above swamp locks, northerly to the river, taking water from it for the machine shop and "Carpet" or "Lowell Co.," and discharging it into the canal, below the locks, with 13 feet fall. This canal, however, reached the river high enough to enable the Merrimac Mills to use the whole fall of 30 feet to advantage.

Another canal was cut on the south side of the old one, below the locks, using the same fall of 13 feet, on which the Hamilton and Appleton Mills were built, in 1828, the latter being believed to be the first mill to use main belts of leather, instead of shafting and gears.

The lower, or old canal, was extended around the angle formed by the junction of the Concord and Merrimac Rivers, until it reached the Merrimac canal, which, by an overflow, discharged its surplus water into it, at that point, and also drove a small grist mill. On the lower level, at a later date, were built the Boott and Massachusetts Mills, with a fall of 17 feet.

Another canal was carried to the northwest, from the swamp locks basin, and, turning to the north, parallel with the Merrimac canal, reached a terrace, where the first fall of 13 feet was used for the Tremont and Suffolk Mills, now united.

From these mills, the water was discharged into a lower level canal, which supplied the Lawrence Mfg. Co. with 17 ft. fall. Of these mills, the Merrimac Co., and the Locks & Canal Co.

machine shop were begun in 1822, the Hamilton in 1825, the Appleton and Lowell in 1828. the Suffolk and Tremont in 1830, Lawrence in 1831, and the Middlesex Mills, on Concord River, in 1830, the Boott in 1835, Massachusetts in 1839. The latter mills were just in operation in 1841, and were all driven by breast wheels.

In 1844, the first turbine was put in, at the Appleton Mills, and in 1845-46 the Prescott Mills, afterwards purchased by the Massachusetts Co., were built, and operated by turbines.

The establishment of the Prescott Mills, practically exhausted the water power obtainable by the original canals, and it was deemed advisable to build the Norton canal, on the river bank, in 1847-48.

Meanwhile, the other water powers in New England had been rapidly taken up, from the Saco river, in Maine, the Salmon Falls, Checo, Skowhegan, Nashua, and the Merrimac, at Amoskeag falls, in New Hampshire, Fall River, the Taunton River, Blackstone, Chicopee, Quinebaug, Housatonic, in Maine, Massachusetts and Connecticut, to the Mohawk, at Cohoes, and many minor streams and tributaries.

Mr. Nathan Appleton, in his pamphlet on the "Origin of Lowell," says the water power was originally estimated at about 9000 h.p., and this was divided into 139 mill powers, of about 60 h.p. each, or the power produced by 25 cubic feet of water per second, on 30 feet fall, on which basis the Merrimac Company, in the final allotment, in 1853, received 24 2-3 mill power.

On the 13 feet fall, the mill power was designated as 60 1-2 cubic feet per second, and on the 17 feet fall as 45 1-2 cubic feet per second. On these terms, the original 139 mill powers were divided. The expenditure in 1823, for the first 50 mill powers, was stated by Mr. Appleton as $120,000. This included the purchase and enlargement of the old canal; also a large amount of land.

One great item in the cost of the water power at Lowell, and other northern cities, has been the under-estimate of the projectors, as to the amount of water which *could* be used at certain seasons, and the insufficiency of the waterway provided. Both at Lowell and Manchester, the canals were far too narrow, and the loss of head too great.

Even at Lawrence, laid out on a more comprehensive scale, the velocity of the water in the northern canal has been such as to undermine the canal walls, in places, several times.

The velocity of the water in these early canals has been 5 or 6 feet per second, when it should not have been over 3. The first canal, at Lowell, was only 60 feet wide, by 8 feet deep, or 480 square feet, and while this would have answered very well for the first 50 mill powers (or 1200 cubic feet water per second), it was entirely insufficient for the subsequent increase.

At Manchester, there was a loss of one foot head in the upper canal, and as it was impossible to widen that, without rebuilding the Concord railroad on an iron viaduct, the new dam, built in 1871, was raised a foot. This dam, built in the most perfect manner, with dressed stone and cement, cost $60,000, or, at the rate of $600 per h.p., for the 10,000 h.p. which it furnishes.

Those who speak of the great cost of water power, forget one thing, and that is, that the first cost has been largely reimbursed to the projectors, by the sales of land in the cities which have grown up around the mills. The land sales have been a constant source of revenue to the Amoskeag Co. The Essex Co. have returned half the capital to their stockholders, and it is some years since the mills at Lowell, which own the old rights of the Locks & Canals Co., have paid any water rent on the original leases, the whole expense having said to have been met by the payments for surplus water, and rents of land and other property.

The great cause of the complaints made about water power, has been overloading the natural flow of the streams, and this has been intensified by the clearing of the forests around their head-ratio.

Had the mills on the Merrimac River confined themselves to their original plans, we should hear no complaints of *short water* and the expense of running "*double plants*." It has been over-taxing the rivers, which has called in steam to fill up the deficiency.

COLORS AND DYEING.

Conducted by CONYERS B. FINKEL,

Professor of Chemistry and Dyeing at the Philadelphia Textile School, in whose Laboratory the tests are made.

Dye Recipes for June.

A Sample Color Sheet is issued each month by the TEXTILE WORLD, showing tests made by Conyers B. Finckel, Professor of Chemistry and Dyeing, in the Philadelphia Textile School, according to the recipes given in the TEXTILE WORLD. We show the latest colors and methods from month to month, and other tests of interest to the dyer. The extra cost of the Dyed Sample Sheets is $1.00 per year.

No. 61.

SEE EXPLANATION IN "REMARKS ON THE DYED SAMPLES."

Dark Slate on 2/30 Cotton Yarn.

Dyed with Diamine Jet Black 2S; W. J. Matheson & Co., 178 Front St., N. Y.

(For 100 lbs. of cotton yarn.)

Dye bath is made up as follows:

5% Diamine Jet Black 2S,
20% Common Salt (sodium chloride).

Enter the yarn (previously wet out) at 140° F., raise slowly to the boil and boil for one hour. Squeeze and let hang in the air one hour, then wash, and boil for 20 minutes with

2% Chrome (potassium bichromate),
2% Bluestone (copper sulphate).

Wash and dry.

In dyeing this sample, the amount of water used in the dye bath was 30 times the weight of the yarn.

No. 62.

Medium Slate on 2/30 Cotton Yarn

Dyed with Direct Grey B (powd); Sykes & Street, 85 Water St., N. Y.

(For 100 lbs. of cotton yarn.)

Dye bath is made up as follows:

1% Direct Grey B (powd),
10% Common Salt (sodium chloride).

Enter the yarn (previously wet out) at 140° F., raise to the boil and boil one hour. Wash and dry.

In dyeing this sample, the amount of water used in the dye bath was 50 times the weight of the yarn.

No. 63.

Medium Slate on 2/30 Cotton Yarn.

Dyed with Direct Grey J (powd); Sykes & Street, 85 Water St., N. Y.

(For 100 lbs. of cotton yarn).

Dye bath is made up as follows:

1% Direct Grey J (powd),
10% Common Salt (sodium chloride).

Enter the yarn (previously wet out) at 140° F., raise to the boil and boil one hour. Wash and dry.

In dyeing this sample, the amount of water used in the dye bath was 50 times the weight of the yarn.

No. 64.

Orange Buff on 2/30 Cotton Yarn.

Dyed with Benzo Colors; Farbenfabriken of Elberfeld Co., 77 William St., N. Y.

(For 100 lbs. of cotton yarn.)

Dye bath is made up as follows:

$\frac{1}{10}$% Benzo Brown B,
$\frac{1}{4}$% Chrysophenine,
2 % Fankhausine.

Enter the cotton (previously wet out) at 180° F., raise to the boil and boil one hour. Wash and dry.

In dyeing this sample, the amount of water used in the dye bath was 50 times the weight of the yarn.

No. 65.

Fast Alizarine Yellow on 2/36 Worsted Yarn.

Dyed with Alizarine Yellow A; Wm. Pickhardt & Kuttroff, 98 Liberty St., N. Y. Dyed on a mordant of Chrome and Tartar.

(For 100 lbs. of yarn, scoured weight.)

Mordant as follows:

3% Chrome (bichromate of potash),
1% Tartar (bitartrate of potash).

Enter the yarn (previously wet out) at 160° F., raise to the boil in 30 minutes, and boil for one hour. Wash, and dye as follows:

20% Alizarine Yellow A (paste).

Enter the yarn cold, work cold 20 minutes, raise to the boil in 40 minutes and boil for one hour. Wash and dry.

In dyeing this sample, the amount of water used in the dye bath was 75 times the weight of the yarn.

No. 66.

Dark Blue on 2/28 Worsted Yarn.

Dyed with Fast Blue ES (paste); John J. Keller & Co., 104 Murray St., N. Y. Dyed on a mordant of Chrome and Lactic Acid.

(For 100 lbs. of yarn, scoured weight.)

Mordant as follows:

3% Chrome (bichromate of potash),
1% Lactic Acid (30% strength).

Enter the yarn (previously wet out) at 160° F., raise to a boil in 30 minutes and boil for one hour. Wash, and dye as follows:

10% Fast Blue ES (paste),
2% Acetic Acid.

Enter the yarn at 150° F., raise slowly to a boil, and boil for one hour. Wash and dry.

In dyeing this sample, the amount of water used in the dye bath was 75 times the weight of the yarn.

No. 67.

Pink on 2/36 Worsted Yarn.

Dyed with Eosine (extra yellow); Schulze-Berge & Koechl, 79 Murray St., N. Y.

(For 100 lbs. of yarn, scoured weight.)

Dye bath is made up as follows:

4% Eosine (extra yellow),
2 % Acetic acid.

Enter the yarn (previously wet out) at 100° F., raise slowly to 130° F., keep at that temperature for 30 minutes. Wash and dry.

In dyeing this sample, the amount of water in the dye bath was 75 times the weight of the yarn.

No. 68.

Dark Green on 2/28 Worsted Yarn.

Dyed with Logwood and Fustic Extracts: J. M. Sharpless & Co., 22 North Front St., Philadelphia. Dyed on a mordant of Chrome and Tartar.

(For 100 lbs. of yarn, scoured weight.)

Mordant as follows:

3% Chrome (bichromate of potash),
1% Tartar (bitartrate of potash).

Enter the yarn (previously wet out) at 160° F., raise to a boil in 30 minutes, and boil one hour. Wash, and dye as follows:

10% Extract of Logwood,
5% Extract of Fustic.

Enter yarn at 140° F., raise to a boil in 30 minutes, and boil one hour. Wash and dry.

In dyeing this sample, the amount of water used was 75 times the weight of the yarn.

No. 69.

Dark Blue on Worsted Cloth.

Dyed with Fast Blue ES (paste); John J. Keller & Co., 104 Murray St., N. Y. Dyed on a mordant of Chrome and Lactic Acid.

(For 100 lbs. of cloth, scoured weight.)

Mordant as follows:

3% Chrome (bichromate of potash),
1% Lactic Acid.

Enter the cloth (previously wet out) at 160° F., raise to a boil in 30 minutes, and boil one hour. Wash, and dye as follows:

20% Fast Blue ES (paste),
2% Acetic Acid.

Enter the cloth at 150° F., raise slowly to the boil, and boil for one hour. Wash and dry.

In dyeing this sample, the amount of water used was 75 times the weight of the cloth.

No. 70.

Red on Worsted Cloth.

Dyed with Scarlet 4R; W. J. Matheson & Co., 178 Front St., N. Y.

(For 100 lbs. of cloth, scoured weight.)

Dye bath is made up as follows:

2% Scarlet 4R,
4% Oil of Vitriol (sulphuric acid),
20% Glauber's Salt (sodium sulphate.)

Enter the cloth (previously wet out) at 140° F., raise to a boil, and boil 30 minutes. Wash and dry.

In dyeing this sample, the amount of water in the dye bath was 75 times the weight of the cloth.

No. 71.

Dark Brown on Cotton Cloth.

Dyed with Benzo Dark Brown; Farbenfabriken of Elberfeld Co., 77 William St., N. Y.

(For 100 lbs. of cloth.)

Dye bath is made up as follows:

4% Benzo Dark Brown,
10% Common Salt (sodium chloride),
2% Fankhausine.

Enter the cloth (previously wet out) at 160° F., raise to a boil, and boil for one hour. Wash and dry.

In dyeing this sample, the amount of water used was 50 times the weight of the cloth.

No. 72.

Light Brown on Cotton Cloth.

Dyed with Cutch; O. S. Janney & Co., 8 Lititia St., Philadelphia.

(For 100 lbs. of cloth.)

Prepare dye bath as follows:

20% Cutch (mat cutch),
2% Bluestone (copper sulphate),
2% Fankhausine.

Enter the cloth (previously wet out) at the boil, and continue boiling for one hour. Squeeze and work 30 minutes in a bath of 30% Chrome (potassium bichromate) at 180° F. Wash and dry.

In dyeing this sample, the amount of water used was 50 times the weight of the cloth.

Remarks on the Dyed Samples.

Before making comment on the dyed samples this month, it is necessary to note a correction in the May Dye Sheet, on Sample No. 55, Black on 2/30 Cotton Yarn. Through some misunderstanding, the recipe appearing with the sample is incorrect, and the dyed sample for recipe No. 55 is shown in the June paper as sample No. 61.

The recipe for Black No. 55 should read: For 100 lbs of yarn, 8% Diamine Jet Black 2S, and 20 % Common Salt (sodium chloride.) Enter at 140° F., raise to a boil, and boil one and one-half hours. Wash, and boil 30 minutes with 4% Chrome (bichromate of potash); finally, wash and dry.

Samples Nos. 62 and 63 are excellent shades of slate, dyed in one operation; there are other marks besides B. and J., these giving different tones of the same color. Sykes & Street have issued an interesting card, showing these direct greys dyed on cotton pieces.

Samples Nos. 64 and 68 are practical shades, showing the compounding of dyestuffs. They are fast to scouring, but No. 64 on cotton is not entirely fast to fulling.

Sample No. 65 shows one of the series of Alizarine colors, is a desirable yellow, and fast to scouring and fulling. Like all Alizarine dyes, care must be exercised in handling, in order to produce a clear and even shade.

Samples Nos. 66 and 69 show a dark blue on worsted yarn and cloth. This is a color which has been recently introduced, and is claimed to be very fast, dyeing evenly.

Little can be said for the remaining colors of this sheet; every one familiar with the dyeing industry knows the merits and use of Eosine. Scarlets are dyestuffs in constant demand, and the one shown here will be found full and clear. The cotton pieces, showing different shades of brown, will be interesting, as they are fast, especially that dyed with cutch.

CONYERS B. FINCKEL,
Prof. Chemistry and Dyeing, Philadelphia Textile School.

Roundabout Notes.

For the Textile World.

DYEING, PRINTING, BLEACHING AND FINISHING.

First boil the cotton in a soap bath, with a little soda, for not more than fifteen minutes. Lift the cotton, add the dyestuff immediately, and reenter. Even for the lightest shades, no Glauber's salts should be used. With simple soap and soda, success may be expected, even on the most difficult combination shades.

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Helbig found that permanganate of potash effaced some blue vegetable dyestains from a white fabric, which even washing and bleaching could not eradicate. He used a strong aqueous solution, and easily took off the brown stain left by the potash salt in place of the blue, with a few drops of ordinary commercial, six per cent. solution of sulphurous acid.

***

Von Kayser & G. S hultz have hit upon a happy idea to get double effects on mixed silk and cotton goods. They treat the material with tannin, which acts as a mordant on the cotton, and as a reserve on the silk. Consequently, when the whole is dyed with aniline black, the cotton alone takes the color. The silk may be left white, or dyed any color.

***

A soap for Turkey red dyeing has been patented in Germany, which supplants both oil and mordant, or rather combines them in itself. It is composed of sulphonated oil, alkali and mordant. It gives excellent results, with great saving of labor. The bleached cotton is well washed and padded, or passed through a bath of this soap, and then run through a bath of an ammonium salt, until there is no smell of free ammonia. The carbonate, phosphate or chloride, are recommended. The goods are then washed in plenty of water and are ready for dyeing. To 50 pints of water, 15 pounds of soap are required, and the bath is kept on, less being added for the second batch.

***

In colors for cotton velvet, the primary consideration is fastness to light, but the dyestuff must also have the ability to go on rapidly and evenly. A writer in the Berliner notes that for blue indigo carmine is chosen, although it bleaches a little in the sun, because it has the advantage over patent blue and cyanole, of not changing in the bath. For red, azo carmine, chromotrope, and for lively shades, palatine scarlet and palatine red may be used, and for yellow, tatrazine. For fluorescent effects, orange G and GG, and rhodamine are to be commended.

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Another writer on the same subject says that the direct colors should be used for mode shades. For yellow, a dyestuff giving a greenish tint, should be taken. Among the oranges, Mikado orange is very fast to light. Diamine brown G is recommended for the same reason. For scarlets, benzo purpurine 4 B; for dark red shades, diamine fast red F, is the best with erica for the lighter tints. As a black for shading purposes, oxzdiamine black, columbia black, and the new direct blacks, generally are not so good as the old brands of diamine black. For blue, methylene blue holds the fort against new rivals. For topping, three coloring matters, methylene blue, safranine and auramine are the best, according to this writer.

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CAMDEN, N. J.

Some of the alizarine dyestuffs are converted into soluble dyes by treatment with fuming sulphuric acid, and in this way have been found useful in wool dyeing. The Farbwerke Hochst have invented a new method of working, using the soluble alizarine reds and other of their alizarines. In this process the wool is first boiled with Glauber's salts for half an hour, and after the addition of a little sulphuric acid, boiled again for half an hour. The mordant, alumina or chrome, is then added, and the alizarine bath is next given. The chief advantage of the process seems to be that the dye penetrates well and thick. Heavily milled woolen goods, such as hat bodies, may very advantageously be treated in this way.

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A process patented in France seeks to remedy certain defects in the process of mordanting with tin. The usual tin salt used in this connection is the tetrachloride. The oxide fixed on the fibre from this salt makes it fragile and brittle. This, by reason of the destructive action of stan ic acid. The inventors propose to set this right by forcing it to combine with a chemical agent to produce an insoluble, or nearly insoluble, salt.

After mordanting with tetrachloride as usual, the acid is neutralized by treatment with certain salts, of which acetate of lead seems to be the most economical. The result is said to give all the advantages, and none of the disadvantages, of a tin mordant.

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The bleaching of cords, velvets, velveteens and other goods, with a pile, is what the Lancashire workman would call "a tickle job," which, being interpreted means that great care must be exercised at every step. They must first be cleaned, sized and singed so thoroughly, that the whole surface has a uniform appearance. All chemicals used, must be in the proper proportion and in the correct degree of dilution. All traces of dust must be kept away, metal must not come in contact with the goods, and stuff waiting to go into the machines must be protected from the possibility of getting splashed. It is also absolutely necessary to clean the boiling box at least once a week. The oil, resin and soap, might otherwise cause specks. If these precautions be not taken, the bleacher is courting trouble, and he can depend upon getting it in some form.

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After singeing, the goods are washed in fresh water 15 minutes, whizzed and then boiled. In boiling, they are carefully folded in the box, pile inwards, covered with a lye of 1 pound calcined soda in 10 gallons of water, steamed for 8 hours, washed thoroughly and dried.

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Then comes bleaching in a solution of chloride of lime, of 7/10° Bé. They are passed through this bath in 15 minutes. The soaked fabrics are left for 4 hours in heaps which must not be too high for fear of crushing the pile. After 4 hours they are plunged into 7/10° Bé sulphuric acid, or better still, into 1° Bé hydrochloric acid, without washing out the bleaching powder. After staying in the acid bath 15 minutes, during which time, the goods must be continually stirred about, they must be freed from every trace of acid by washing in water, first warm, then cold.

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This last wash usually completes the process, but if the bleach is not quite complete, the baths of chloride of lime and acid must be repeated, followed of course, by the final wash. The goods are finally dried. This is done to most advantage in a drying room, with the stuff opened out as much as possible. If, however, the cylinders are used, the wrong side of the fabric only must touch the tins, otherwise the pile will suffer. There are a lot of "musts" and many "don'ts" about this process, but when the bleacher toes the line the results are perfect.

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the fresh gas, or its aqueous solution, and the ammonium thioacetate proposed as a substitute, is certainly more difficult to prepare and less easy to use. To obtain it, glacial acetic acid is treated with phosphorus pentasulphide and the product, thioacetic acid is dissolved in a 30 per cent. solution of ammonia. Only enough for use, say for a week, should be made at a time, which is another disadvantage. Still another is that the solution to be tested, after the customary addition of hydrochloric acid, must be heated to the boiling point on addition of the new reagent and allowed to cool, before some of the heavy metal precipitates show themselves.

* * *

For delicate noses wishing to avoid the generous bouquet of H_2S, here are the results: Arsenic gives a white turbidity; on boiling the trisulphide is thrown out. Bismuth, copper and tin are precipitated partly in the cold, completely on heating. Plumbic salts give a dark red pp., Mercuric salts, also a red pp., changing to black on warming. Platinum and gold gives red pps., cadmium precipitates the sulphide, and ferric salts are reduced to ferrous, and salts of chromic acid to chromic salts.

The Stability of Logwood Colors to Light.

By Peter T. Austen, Ph. D., F. C. S. *in Textile Colorist.*

Great progress has been made the last few years in the manufacture of logwood products. Extracts of greater purity and strength have been produced, and, as a novelty, the granulated logwood product, known technically as "Hemolin," has been introduced. It occurred to me that it would be interesting to make a set of comparative dyeings, and determine by exposure, if noticeable differences exist in the stability to light of these various logwood products.

To this end, I dyed swatches of woolen cloth with a high grade logwood extract, logwood chips of best quality, Hemolin XS and Hemolin X, on chrome mordants and on tinctorial quality with 8 and 10 per cent. of Hemolin X, which was a blue black. In order that any possible differences arising from variations in the mordanting might not be overlooked, the swatches were mordanted in three ways:

1. 3 per cent. chrome and 3 per cent. tartar.

2. 3 per cent. chrome and 1 per cent. sulphuric acid.

3. 3 per cent. chrome.

After dyeing the swatches were divided, one-half being exposed to strong sunlight for a week, while the other half was kept in the dark. In all cases, the exposed samples lost slightly in bloom and gained in depth of color. The decrease in bloom was, however, more noticeable in the case of the 8 per cent. standard than of the 10 per cent.

The difference between the tones of color after exposure is not very marked, but in the lighter dyeings, the extract was not quite equal to the Hemolins and chip logwood. No difference in the tones of color could be observed after exposure between the dyeings both light and heavy with the Hemolins and chip logwood.

This is probably accounted for, by the fact, that the manufacture of Hemolin, is essentially an oxidizing process, as is also the method of curing chips. Hence, the coloring matter in Hemolin and chips is doubtless in the fully oxidized condition, or as hæmateine, while in the extract the coloring principle, hæmatoxyline, has been only partly oxidized into the coloring matter, hæmateine.

From these experiments, it is therefore to be inferred, that of logwood blacks on chrome wool, those dyed with Hemolin and chips, behave a little better on exposure than those dyed with logwood extract.

—Among recent improvements in apparatus for manufacturing purposes, is the seamless steam kettle, made by the Walker & Pratt Mfg. Co., of Boston, Mass. These kettles are very useful where liquids of any kind are to be heated or boiled. They are very simple in construction, and at the same time durable, efficient and economical. The steam chamber is cast in one piece with the kettle, so that there is no possibility of leakage. These kettles are used in factories of all kinds, also in hotel and restaurant kitchens. They are also largely used in public institutions, for making soups, etc. The manufacturers furnish full illustrated circular upon application.

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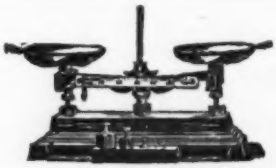

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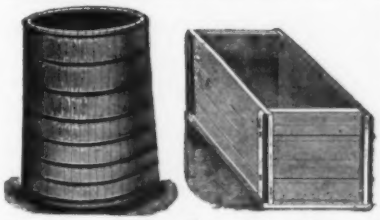

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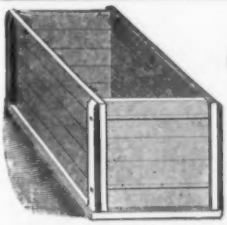

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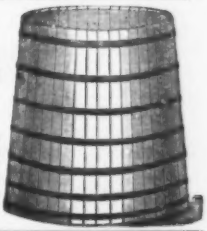

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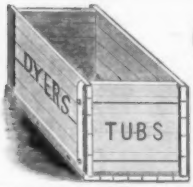

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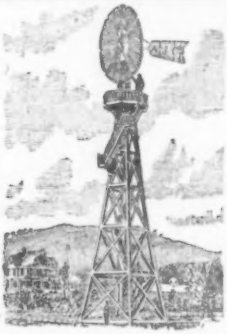

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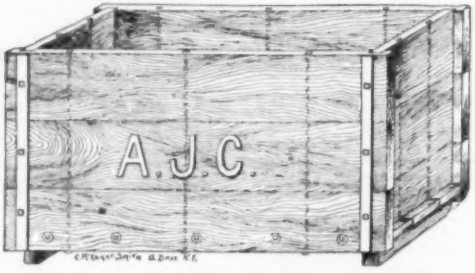

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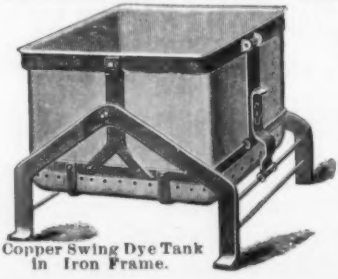

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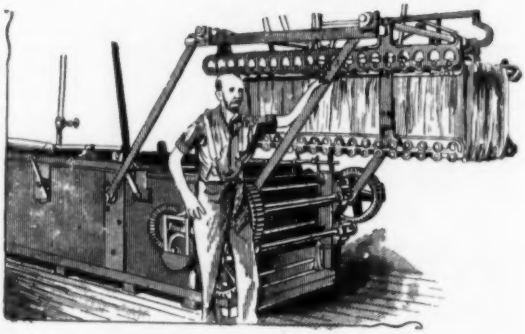

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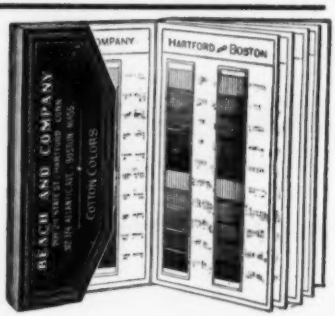

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IT SPEAKS FOR ITSELF.

The only Practical, Simply-Constructed, Labor-Saving Device for Skein Yarn or Slubbing Dyeing ever offered to the Trade; will save THREE FOURTHS in labor and produce better results. Two Frames supplied with each machine.

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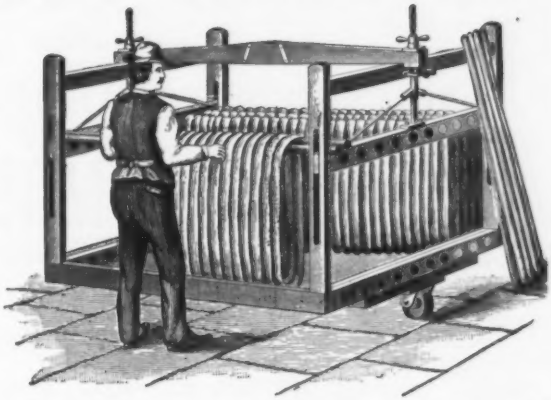

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FOR STANDING BATH WORK ON COTTON IT HAS NO EQUAL.

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—NEW JERSEY, Stewartville. A company is being organized to erect and operate a knitting factory at this place.

—*NORTH CAROLINA, Asheboro. It is reported that a charter has been applied for by the new knitting company at this place, which we have previously reported would be organized by Mr. A. C. McAllister.

—NORTH CAROLINA, Durham. A new knitting mill will be put in operation at this place by George M. Graham and others. A building has been leased and machinery ordered, a part of which has already arrived.

—PENNSYLVANIA, Connellsville. A knitting factory is contemplated at this place by a new company, to be known as the Connellsville Extension Co.

—*PENNSYLVANIA, Lykens. In regard to the new stocking factory reported at this place, we are informed that H. A. Romberger is the proprietor. He will manufacture cotton half hose, using ten knitting machines at the start, but will put in more later.

—PENNSYLVANIA, Meyersburg. It is reported that a party of capitalists will establish a hosiery factory at this place.

—PENNSYLVANIA, Plymouth. It is understood that the Roxburg Carpet Mill will be changed over into a hose factory to be operated by Thos. West

—PENNSYLVANIA, Royersford. It is reported that plans are being made for a large hosiery mill to be built on Main St.

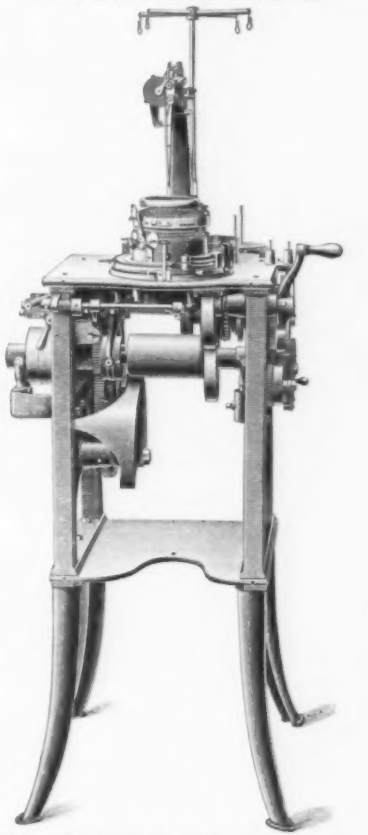
—*PENNSYLVANIA, Spring City. The Schuylkill Valley Knitting Co. has been formed to manufacture men's ribbed underwear. They will put in six knitting machines at start, and be ready for production by May 15th. The firm consists of Wm. T. Williams, H. F. B. Booth, Susanna Rogers and Martha Evans.

—*VIRGINIA, Winchester. The Lewis Jones Knitting Mill Co., removed from Bristol, Penn., are erecting a new building at this place, which will be 150x40 feet in size.

—WASHINGTON, Tacoma. The P. G. S. Hosiery Co. has been incorporated, with a capital stock of $2000, to manufacture all classes of hosiery. Calvin Phillips, Horace H. Greeley and R. D. Sapp are in the incorporators.

—WISCONSIN, Sheboygan. F. A. Bennet is reported to have completed buildings for his new knitting mill, and is putting in the machinery.

THE ACME AUTOMATIC KNITTER
for SEAMLESS HOSIERY.



This machine is entirely past the experimental stage.

The method of transferring tops more practical than changing cylinders.

Machine will produce anything from a short foot to the longest hose without substituting or changing any parts whatever.

Extra thread in heel does not show in instep.

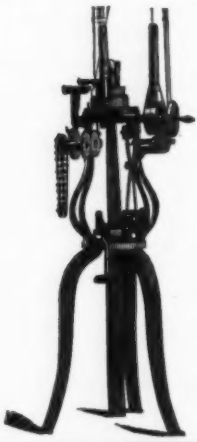
In a wool hose a cotton, merino or silk re-inforcing thread may be used as it is positively thrown in on the first course of the heel and toe and as positively taken out on the last course.

Stitch automatically loosened in heel and toe to accomodate any size of reinforcing thread.

Seam in heel and toe remarkably strong and close and heel is large and full. Runs equally well on any grade of goods.

Send for Descriptive Catalogue.

MAYO KNITTING MACHINE CO.,
FRANKLIN, N. H.



Pepper Manufacturing Co.

Lakeport, N. H.,

Manufacturers of

Knitting Machinery,

INCLUDING

Pepper's Flat-Ribbed Cuff Machine,

Automatic Welt and Loose Course Machine for Sock Tops. New Circular Stripes with Welt, Loose Course and Striping (Automatic), for Shirt Cuffs, Sock Tops, Hose Legs, Wristers, etc.

All kinds of

CIRCULAR RIBBED MACHINES,

For Men's Underwear, Ladies' and Misses' Hose Legs & Legnigs.

CORRESPONDENCE SOLICITED.

RIBBED ANKLETS

for Canton and Jean Drawers made to order.

Rib Knitting Machinery,
Spring Knitting Needles,

And Rib Machinery Supplies of all Kinds.

Collarette Attachment. Patent Springs for Drying Boards.

CHARLES COOPER'S

MACHINE and NEEDLE WORKS,

Branch Shop
Amsterdam, N. Y.

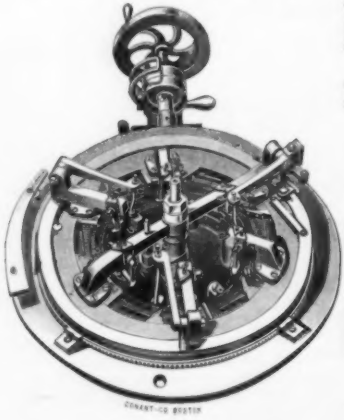
Bennington, Vt.

SOMETHING NEW UNDER THE SUN

TO

Manufacturers of Ribbed Underwear,

Sweaters, Cardigan Jackets, Leggins, Cuffs, Etc., who are not acquainted with their



Leighton Knitting Machines,

WHICH

KNIT THE GOODS

WITH THE

Greatest Economy.

Manufacturers who are using The Leighton Machines, know that it **FILLS THE BILL** completely. Correspondence is solicited from parties wishing to establish a Knitting Plant, or who may wish to improve their present line of goods. Address,

Leighton Machine Co.

MANCHESTER, N. H.

Business Established in 1873.

Enlargements and Improvements.

—CONNECTICUT, New Britain. The American Hosiery Co. contemplate making extensive improvements at their factory on Park St.

—INDIANA, La Fayette. At a recent meeting of the stockholders of the La Fayette Hosiery & Mfg. Co., it was decided to increase the capacity of the plant by the addition of new machinery. Frank B. Shepard is president of the company, and John Allen, secretary and treasurer.

—MICHIGAN, Colon. The Lamb Knit Goods Co. will build a brick annex in which to store their goods, and will increase their output one third.

—NEW YORK, Herkimer. A further report in regard to the Gem Knitting Mills addition, states that the new building will be in the form of an L, 60 feet wide, extending at right angles 100 feet and 128 feet. The structure will be of brick, five stories high.

—PENNSYLVANIA, Chester. The Chester Hosiery Co. will put in ten additional knitting machines.

—PENNSYLVANIA, Nazareth. Henry Kraemer, manufacturer of seamless hosiery, is putting in new machinery.

—PENNSYLVANIA, Nazareth. The Nazareth Mfg. Co. have added twelve new knitting machines to their equipment.

—PENNSYLVANIA, Reading. Mr. William J. Bobst, 213-15 Pearl St., informs us in regard to his new hosiery factory, that he will put in 150 knitting machines, operating them by steam power in the manufacture of 84-needle half hose.

—PENNSYLVANIA, Reinhold's. The Wyomissing Hosiery Co. will add 12 knitting machines to their equipment.

—PENNSYLVANIA, Schuylkill Haven. Daniel Sharidan, manufacturer of jersey underwear, will build an addition to his plant.

Mills Starting Up.

—CONNECTICUT, Danielsonville. The Aspinock Knitting Mill has been started up, under the management of Herbert E. Wilson, for the Globe Yarn Mills.

—NEW YORK, Little Falls. The Enterprise Knitting Mill has been leased to W. C. Hazer, who will put in operation the first of July.

—NEW YORK, Valatie. The strike at the Valatie Knitting Mills has ended, and the mill has started up.

Mills Shutting Down.

—NEW YORK, Cohoes. The Wayside Knitting Mills have shut down, owing to wage difficulties.

—Bullock & Crenshaw, of Philadelphia, have just issued the twenty-sixth edition of their price list of chemicals, for experimental, technical, analytical and medicinal purposes. The firm is agent for the chemical products of Doctor L. C Marquart, of Bonn, and Doctor Schuchardt, of Goerlitz, and has had 40 years experience in the importation of such chemical apparatus as Bohemian glassware, and Berlin and German porcelain.

—McCleary, Wallin & Crouse, Amsterdam, N. Y., are adding new machinery made by the M. A. Furbush & Son Machine Company, of Philadelphia.

THE
KEYSTONE
KNITTER
For Seamless Hosiery.

CYLINDERS
OF
Forged
Steel

With bevel top for perfecting the stitch in the plain fabric and closing the gore in the heel and toe.

Automatic Ribbers, Loopers, Winders, Steam Presses, etc.

Keystone Knitting Machine Man'f'g Co.,
1711-13-15 RANDOLPH ST., PHILADELPHIA.

CRANE MFG. CO.
LAKEPORT, N. H.
Spring Needle Circular Knitting Machine
For Hosiery, Shirts, Drawers, Jersey Cloth and Stockinet.
A Specialty of Hardened Bladed Burr Wheels with Self Oiling Brackets.

The BALLOU
Automatic Ribbed Knitting Machine
Built with **Sectional Cam Ring** and the most perfect **weight take-up**. Best, Strongest and Most Durable Machine. **Two Feed Double Knee Machines.**
We can add to our own or other makes now in use. Also Brushing Machines. Lewis Jones, Bristol, Pa.

Why do Knitting-Machine Builders Try to Produce a Machine to Make a

BRANSON SOCK?

JAS. L. BRANSON,

OF THE BRANSON MACHINE COMPANY,

506 St. John, St., Philadelphia,

Is the original inventor and manufacturer of this class of Machines, and, like most originators, manages to keep ahead of all imitators. Send for Circular A.

JOHN S. PALMER,

Manufacturer of

PAPER BOXES for Hosiery and Textile Goods.

Metal Edge Boxes or Heavy Goods.

35 Wistar St., Germantown, Pa.

STEPHEN A. ASHMAN,

Forged Steel Cylinders and Dials

For Knitting Machinery.

3 Fetter Lane, PHILADELPHIA.

HAVE YOU EXAMINED

---W. STAFFORD & CO.'S---

IMPROVED RIBBED UNDERWEAR MACHINES.

HIGH GRADE

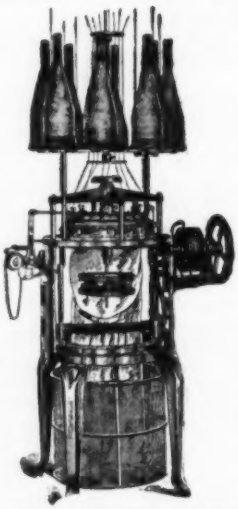
AUTOMATIC TAKE-UP

SECTIONAL DIAL CAP

SECTIONAL CYLINDER RING OPEN FOR INSPECTION

WEIGHT TAKE-UP IF DESIRED

RIGID DIAL SUPPORT



ROYAL RIB Plain and Fancy.

AVOID SECONDS

KNIT YOUR YARN INTO Perfect Fabric

STOP MOTIONS

BORDER MACHINES

SLEEVERS Full Close Welt.

SWEATERS, SKIRTS, CAPS, JACKETS and JERSEYS.

Uses same Needles as NYE & TREDICK and SNYDER & FISHER, and other Standard Machines.

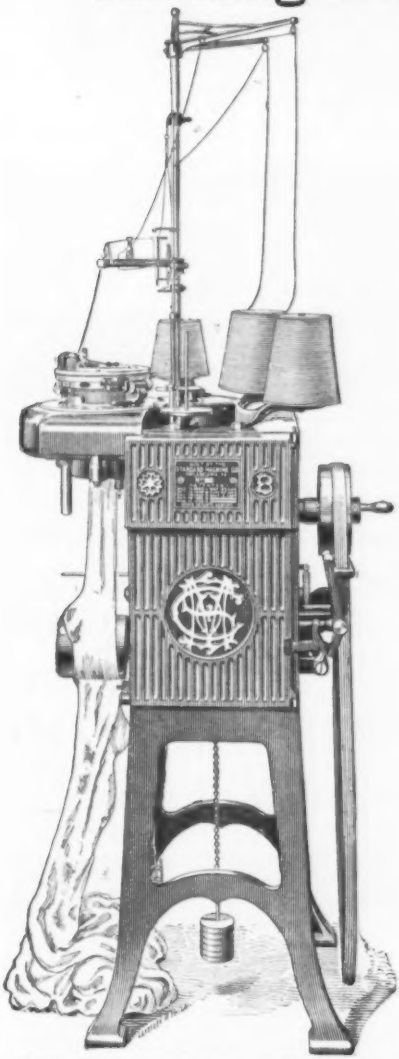
A BETTER MACHINE FOR LESS MONEY.

JAMES TAYLOR, 835 Arch Street, Phila., Pa.

SOLE SELLING AGENT.

The "STANDARD B"

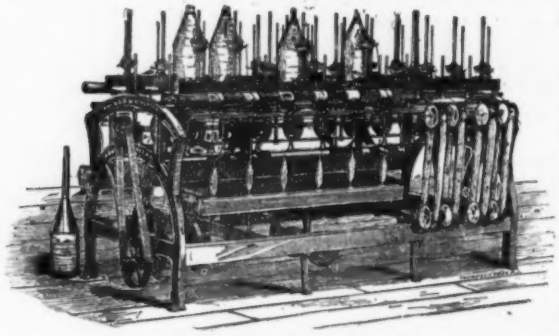
Automatic Knitting Machine.



FOR PARTICULARS ADDRESS,

THE STANDARD MACHINE CO.,

508 MINOR STREET, PHILADELPHIA, PA.



GEO. W. PAYNE & CO.,

PAWTUCKET, R. I.

WINDERS for Hosiery Manufacturers. Wind from cop, skein or bobbin.

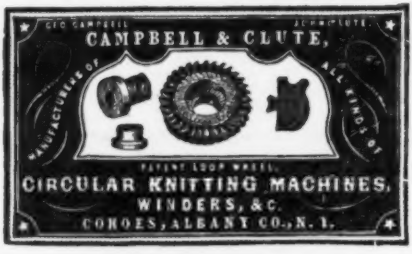
Improved Upright Spoolers,

Doubling Spoolers,

Quillers, Etc.

We make a complete line of this machinery, and have hundreds of machines in satisfactory operation all over the country. We invite correspondence.

SHIRT Border Machines



Cuff Machines. Four and Five Section Flat

CIRCULAR RIB KNITTING MACHINES,

Carefully designed and well made with Solid Forged Steel Cylinders and Dials, Segmental Cam Rings, Encased Take-up, Stop Motions, etc. Standard Sizes, Reasonable Prices. Also

KNITTING MACHINE CYLINDERS AND DIALS, CHAINS, JACKS, ETC.

If interested, address

W. STAFFORD & CO., West Mill St., Little Falls, N. Y.

Novelty Knitting Machine Co.,

MANUFACTURERS OF

AUTOMATIC CHECKERS, VERTICAL STRIPING MECHANISM.

SPRING NEEDLE

KNITTING MACHINERY,

AND OTHER NOVELTY ATTACHMENTS

BURR WHEELS With Removable Hardened Wings, Shafting Hangers, Pulleys, Etc.

F. L. WIGGIN, Proprietor, LOWELL, MASS.

BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS. T. PEARSON 1815-21 TAYLOR ST. KENSINGTON PHILA.

—The manufacturers of hosiery in this country will be interested to know that the well known firm of knitting machinery builders, the Messrs. Scott & & Williams, whose offices and show room are at rooms 3, 4 and 5 Knickerbocker Building, S. W. cor. 6th and Arch Sts., Philadelphia, have on exhibition a full line of English seamless hosiery. These samples, which are exceptionally full and varied, were made on the Scott & Williams machinery in England, and bought in the open market for this enterprising firm. Manufacturers of hosiery will do well to call and examine this exhibit, as it is unique in its completeness and can not but be suggestive to the American manufacturer.

—It seems as though the insurance field is limitless. Every day some new idea of covering an unprotected quarter is brought out. The Fidelity and Casuality Co. now comes forward with a plan to guarantee that goods sold are as represented when advertised. This, it is considered, will meet the needs of reputable merchants, who will be backed up by the insurance company, and thus obtain an advantage before the public, not obtainable by irresponsible advertisers. The insurance company attempting to guarantee that goods sold are as represented when advertised, will need to have its clothing adjusters brought up in a shoddy mill.

—The TEXTILE WORLD is a model of class journalism. Its general matter embraces reviews of cotton and wool markets, mill news, description of new machinery, claims and new patents, suggestions to manufacturers, and answers to questions. Its special departments—cotton, woolen, colors dyeing, and yarns—are conducted under separate editorial supervision, and give technical instruction, with popular information and news. A feature of the work is its special editions, directories of the trade, which must be valuable to buyers of textile products, and sellers of materials and supplies. Another interesting feature is the sketches, with portraits of prominent manufacturers. [The Sewing Machine Times.

CHAMPION SEWING MACHINE COMPANY,
REMOVED to 1819 North Fifth, and 1822-26 Manor Streets, PHILADELPHIA.

Also New Champion Crochet Machines, sewing and trimming machines, etc. Send for descriptions.

Rib Knitting Machines of all Kinds.

WE NEED NO SPECIAL POINT

To prevent the needle from picking up the brass, nor special mechanism to prevent injury to the brass, for the needle in our looper never strikes anywhere but the centre of the point.

HEPWORTH & CO.,
Lehigh Ave. & Mascher Sts., Phila., Pa.

LACINGS For Overshirts and Underwear,
Both Tipped and Tasseled, and
OVERSHIRT NOVELTIES.
For Samples and other information, address
HEPNER & HORWITZ, 84 Leonard St., N. Y.

BUSCH & LINN,
(Formerly connected with J. C. Goodwin.)
General Repairers for all SEWING MACHINES,
Fabric Trimmers, Folders, Cutting Machines, and Experimental Work.
120 NORTH 7TH STREET, PHILADELPHIA.

Stanton & Lewis, 316 & 318 Branch Street, Philadelphia, Pa.
Central Steam Forge.
Special Machinery for Forging Weldless Knitting Machine Cylinders. Dials of best Steel to order.

H. BRINTON & CO.,

Successors to

BRINTON, DENNEY & CO.,

Builders of a Full Line of

CIRCULAR RIB and SEAMLESS KNITTING MACHINERY,

FOR

UNDERWEAR AND HOSIERY.

213 and 215 Race Street,

PHILADELPHIA, PA.

GIBBONS FRAME

Sewing Machines, with or without Trimmers.

SPECIAL FEATURES:

Welting Machines, Finishing Machines, Machines for Sewing Wet Goods, Machines for Double Heel Work, Machines with Concealed Stitch for Tops of Stockings, Etc., Etc. Tables and Shafting with Transmitters.

All machines have Ball and Socket Bearings, with Hardened and Ground Working Parts.

MACHINE JOBBING.

Manufactory, Second and Diamond Sts, Philadelphia.

Thomas Wolstenholme, Sons & Co.

The partnership hitherto existing under the firm name of Wolstenholme, Harrigan & Clarke, operating the Allegheny Worsted Mills, was dissolved on May 23d, Mr. Cornelius Harrigan retiring. The business will in future be conducted under the firm name of Thomas Wolstenholme, Sons & Co., who will receive all accounts and pay all indebtedness against the old firm.

—The Cranston Worsted Mills, Bristol, R. I., have added six of Hall & Stells' new worsted spinning frames. Orders are coming in freely. This concern makes some of the finest worsted and mohair novelty yarns. They wish to call the attention of the trade to their "Ice Wool," wound on spools, making it more convenient for household use than the unspooled imported.

—The Sawyer Woolen Mills, Dover, N. H., are putting in one of Barker's rubs on a card. This mill has a splendid set of telephones, connecting every room with the office.

—It is not common to speak of cloth having insomnia, yet some of it looks as if it never had a nap.

—The Colonial Mutual Fire Insurance Co., of Philadelphia, has been incorporated under Pennsylvania law, with a paid-in guarantee fund of $50,000. Theodore C. Search, of the John B. Stetson Co., who is so widely and favorably known in textile circles, is president, and is a member of the board of directors, as is James Dobson, of John & James Dobson. Granville B. Haines is vice-president and manager, and H. C. Magee, secretary and treasurer. The board of directors comprises such well-known names in the world of finance, as Isaac Cooper, Henry Erben, Samuel Bell, Jr., John Lucas, H. G. Michener, George Campbell, T. Broom Belfield, William M. Coates. The company, not being connected with any tariff association, is in position to accept business at such rates as seem adequate, making each risk stand on its own merits. The guarantee fund is to be used exclusively for loss settlements.

—The M. A. Furbush & Son Machine Company, Philadelphia, has just made several additions and improvements to the carding and spinning mill operated by Lord & Lees, 3828 Terrace St., Manayunk, Philadelphia. This new firm is composed of Elmer Lord, son of John Lord, late partner of Carter & Lord, and R. A. Lees. They are running the mill full on carpet and backing yarn.

—"Summer Excursions," is the title of the Fitchburg R. R. contribution to current railroad literature. It is a handsome publication, and not only shows rates to excursion points on its own line and connections, but gives a complete list of the hotels and boarding houses in the territory covered by its lines, besides a vast amount of information, calculated to be of service to the tourist. For a copy, address J. R. Watson, General Passenger Agent, Fitchburg R. R., Boston, Mass.

—W. E. Kinloch, now with the Beaver Dam Cotton Mills, Beaver Dam, Wis., is soon to become superintendent of the Central Mills Co., Southbridge, Mass.

—B. F. Avery & Sons, of Louisville, Ky., have 88 employees, whose total term of service for the firm covers 2003 years. The individual records run from 15 to 41 years, the average being nearly 23 years. This record it is believed cannot be duplicated. Will "Old Employee," wherever he may be, speak up?

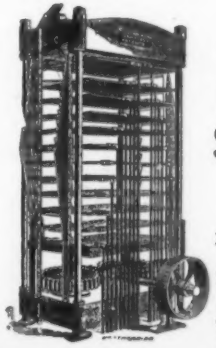
—Representatives of the McColl Mfg. Co., of McColl, S. C., have been North, placing orders for machinery, and have contracted for revolving flat cards, railway heads and drawing frames, of the Pettee Machine Works, Newton Upper Falls, Mass.

—M. C. D. Borden has more doffers in his mill just now than any other manufacturer. His employees take off their hats without a trace of Gessler servility, and some of them wish to buy him a crown.

—"I want a suit, but it must be in the latest style." Kindly take a chair, and wait a few minutes; the style is just changing."—[Fliegend Blatter.

—Women will soon be able to get their "board and clothes" together, thinks the Boston Herald, because a fabric is being introduced, made from wood slit into the finest possible shreds. Their skirts will speedily be literally as stiff as boards.

—The Hastings Wool Boot Co., of Hastings, Mich., have just added one 60-inch card, of the Furbush make.



THE
CRAWFORD
Hollow Plate
Steam
Press
For Knit or Woven Goods.
Is worth investigating
J. J. Crawford & Son
Nashua, N. H.

WM. COREY CO.,
Manufacturers of Knitting Machine
Latch Needles,
MANCHESTER, N. H.

Excelsior NEEDLES
The Best Hosiery Needle in the market.
Manufactured by
Wardwell Needle Co., Lakeport, N. H.

LOYAL T. IVES.
MANUFACTURERS OF ALL KINDS OF
SPRING
Knitting Needles
New Brunswick, N. J.

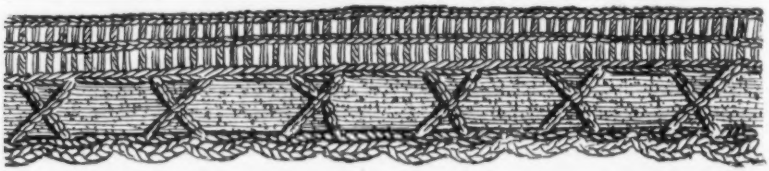
SPRING AND RIB
Knitting Needles.
Fine needles for Plush, Cap and Balbriggan work a specialty.
A sample 1000 will speak for themselves.
DAVID J. AMES.
PHILMONT, - NEW YORK.

ORION TREAT,
MANUFACTURER OF
SCREW RIVETED BALMORAL AND DOUBLE RIB NEEDLES.
(Patented May 6, 1890.)
Manchester Green, - - Conn.
All work guaranteed.

H. LYDALL & FOULDS,
Manufacturers of all kinds of
Knitting Machine Needles, Narrowing Points, Hooks, etc.
Pat. Screw Rivet Balmoral Needles a specialty
MANCHESTER, CONN.

Wm. Breedon & Son,
Manufacturers of
Spring Knitting Needles,
And Burr Blades of all kinds.
Amsterdam, N. Y.

STAR NEEDLE CO.
Spring Knitting Needles and Points from the Best Cast Steel, Satisfaction Guaranteed.
S. K. Paramore
Manager.
New Britain, Conn.



Pre-Eminently the Best

FRIEDBERGER'S

STANDARD

EDGINGS AND BRAIDS

Superior in Design, Quality and Finish to all Other Makes.

"We will make for you anything that Friedberger makes; give us his samples and prices" is occasionally thrown at us.

INABILITY to originate saleable patterns and attract trade, leads our COMPETITORS(?) to adopt the above PICAYUNE METHOD which we trust will be accorded deserved recognition.

LARGEST PLANT

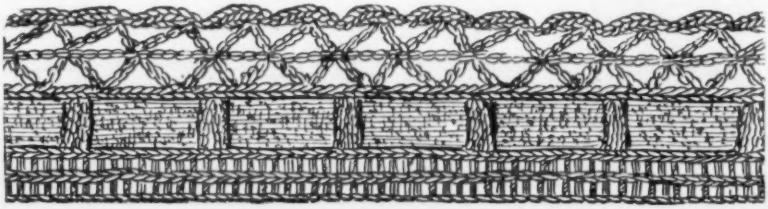
COMPLETE ORGANIZATION • AND • **UP TO TO DATE METHODS**

enable us to deliver in 48 hours any article we manufacture.

We wind our Edgings on large or small spools; either end to feed off spool as desired.

SPRING, 1896, STYLES NOW READY.

GERMANTOWN, - PHILADELPHIA.



THE

Merrow High Speed Crochet and Scallop or Shell Machines.

For finishing the edges of Knit Goods, Bed Blankets, Horse Blankets, or other fabrics.

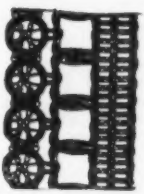
For particulars and samples, address

THE MERROW MACHINE CO.,

133 Sheldon St., HARTFORD, CONN

FLEMING & CHAPIN,

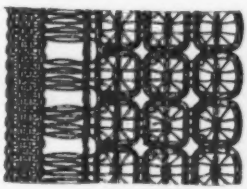
YARNS, THREADS, TAPES, BRAIDS,



CROCHET LACE EDGING,

FOR RIBBED UNDERWEAR.

Patented Dec. 1894.

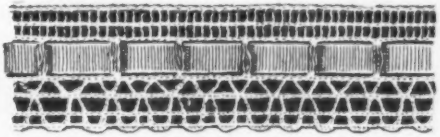


215 Church St., Philadelphia, Pa.

PERSEVERANCE MILLS.

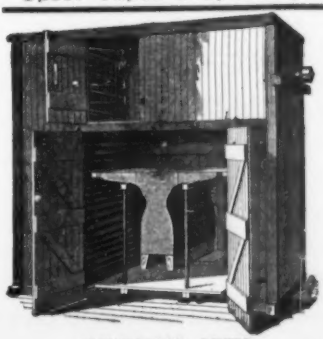
Krout & Fite Man'f'g Co., MANUFACTURERS OF

SILK AND COTTON NARROW FABRICS,

Lace  Edgings

FOR LADIES' JERSEY RIBBED UNDERWEAR.

Spool Tapes a Specialty. 2632-40 Mascher Street, Philadelphia, Pa.



UNDERWEAR DRYER.

Cyclone Dryers

—FOR—

Stockings, Underwear, Stock, Yarns, Cloth, Etc.

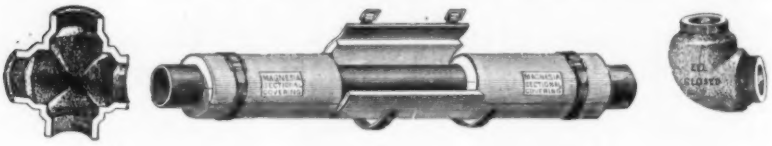
Textile Machinery and Shafting Work.

PHILADELPHIA

TEXTILE MACHINERY CO

Hancock St., above Lehigh Ave.,

PHILADELPHIA, PA.



IN HARD TIMES, STOP THE LEAKS.

Just the time to thoroughly cover the pipes and economize on coal. No time for "make shift" coverings either. Use the best non-conductor of all the Sectional Steam Pipe and Boiler Coverings.

THE GREAT COAL-SAVER,

MAGNESIA

FIRE PROOF EFFICIENT

MANUFACTURED BY

THE KEASBEY & MATTISON CO.,

AMBLER, - - PA.

CINCINNATI, 114 W. Second St. CLEVELAND, 117 Water St.

SELLING AGENTS:

New York, Robert A. Keasbey, 54 Warren St.
Boston, S. C. Nightingale & Childs, 134 Pearl St.
Philadelphia, Macan & Co., 1420 Callowhill St.
Baltimore, Wallace & Bro., 432 E. Pratt St.
Washington, Wm. B Morgan, Builders' Exch.
New Orleans, Delbert Engineering Company, 23 Union St.
Memphis, Symmes & Co., 192 Front St.
Milwaukee, F. Sprinkman, 133 Sycamore St.
St. Louis, F. Bocler, 108 Walnut St.

SELLING AGENTS:

Detroit, S. P. Conkling, 20 Atwater St., East.
Des Moines, J. C. & R. B. Carter.
Minneapolis, Arthur L. Otto, 219 So. 3rd St.
Omaha, Spencer Oil-, 307 S. Sixteenth St.
Denver, C. W. Badgley & Co., 18th & Market Sts.
Salt Lake City, Utah & Montana Machinery Co.
Butte City, Mont., R. W. James.
San Francisco, De Solla & Deussing 2 California St.

Mechanical Draft.

The B. F. Sturtevant Co., of Boston, has just issued a new sectional catalogue on the application of Sturtevant fans for mechanical draft, which is preliminary to a general treatise on the subject.

The substitution of mechanical for chimney draft has been slow, but certain, since the day when the Sturtevant blower was tried for burning slack and waste fuel, and a forced draft demonstrated practicable for high speed water craft, including Uncle Sam's navy, fully 75 per cent. of which vessels have since adopted the Sturtevant fans.

Without considering the large original cost of chimneys, their capacity is limited, their draft cannot be regulated to suit conditions, and their operation entails unnecessary waste of heat in the flue gases. The fan was soon found to be the cheapest and most readily applied device for increasing the steaming capacity of existing boiler plants, particularly in sugar refineries and electric generating stations, or entirely superseding the chimneys, until many smoke towers now stand monuments to a departed industry.

The chimney is trustworthy only to the point of minimum capacity, while the fan meets maximum requirements almost instantly. With a fan, only a low stack, with inexpensive foundations, is necessary, and in the case of electric traction plants, where the greatest demand for steam is on stormy days, when chimney draft is at its worst, a method of this flexible character is invaluable.

Then too, the temperature of gases necessary to secure sufficient draft, with an ordinary chimney, can commonly be lowered from 200 degrees to 300 degrees, when a fan is substituted, with resulting economy in coal. Beside, with a properly designed fan, fuel economizers may be operated at their maximum efficiency.

With a fan, too, the size of the economizer is unrestricted, cheaper grades of fuel may be used, and the flue gases utilized for feed water heating. The Sturtevant Company has had 25 years of experience in this line, and claims to be better equipped for manufacturing and applying such apparatus, than any other concern in the country.

—Those who have followed the development of our Southern neighboring republic, Mexico, must have been impressed with the uniform prosperity attending textile establishments. We have personally known several American overseers and superintendents who have gone there with the intention of remaining only a short time, but have found the conditions so favorable and the opportunity for profit so advantageous that they have remained. The climate of Northern Mexico is an excellent one; the tariff is such that manufacturers are protected, and it seems to offer decided inducements to those seeking locations. In this connection, the advertisement of the Doahuila & Durango Development Co., 23 Broad St., New York, which will be found on another page, is of interest. This company invites correspondence from those interested in the matter, and believes it can demonstrate great advantages.

ELECTRIC MOTORS

FOR THE

More Economical Operation

OF

ALL TEXTILE MACHINERY.

Power Transmitted over Long or Short Distances.

Write for Particulars and Estimates.

General Electric Company,

Main Office: SCHENECTADY, N. Y.

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FOREIGN DEPT: { Schnectady, N. Y.
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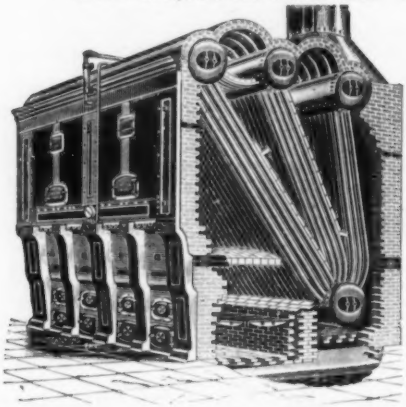
THE "STIRLING" WATER TUBE STEAM BOILER.

Over 150,000 H. P. in use. 45,000 H. P. sold in 1892.



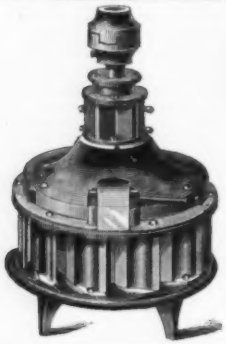
Absolutely safe at high pressure. Not an ounce of cast metal used in its construction. WE CAN PROVE to your entire satisfaction that the "Stirling" will give much higher average economy, with far less expense for repairs, than any boiler on the market to-day, and in proof of our claims we can refer you to some of the largest firms in the Country Please do us the favor to investigate before purchasing elsewhere.

Prices very reasonable. Catalogues, testimonials and complete information promptly furnished.

J. BRADFORD SARGENT,

8 OLIVER STREET,

BOSTON, MASS.



BURNHAM'S

Percentage:
Full Gate - 84
¾ " - 84
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NEW IMPROVED

STANDARD TURBINE.

It gives on either a Vertical or Horizontal shaft more power for its price, yields a greater percentage for water used, either with full or part gate drawn, and is the simplest, most durable and best finished wheel made. Send for illustrated catalogue and state head of water and power required.

Burnham Bros., York, Pa.

12 SOUTH GEORGE STREET.

Christiana Machine Co., CHRISTIANA, PA.

MANUFACTURERS OF

THE BALANCED GATE

TURBINE WHEEL.

Suitable for Light or Heavy Service.

Globe Outer-Cases and special Wrought or Cast Iron Flumes.

SUITABLE FOR ANY SITUATION.

GEARINGof all kinds, SHAFTING, PULLEYS and everything required for a complete POWER PLANT.

SATISFACTION GUARANTEED. Mention this paper.

Designs and Estimates Furnished on Application. Send for Catalogue.

J. E. RHOADS & SONS

MANUFACTURERS OF

LEATHER BELTING BELT PRESERVERS

239 MARKET ST PHILADELPHIA. WILIMINGTON. DEL.

The American Tin Plate.

American tin plate manufacturers whose funny bones were recently laughing in their sleeves at the burlesques on that industry, written to order for Democratic newspapers, are now shaking their sides in cachination over the turn of the tide. Merchant & Co., of Philadelphia, was among the firms, the smelting department of which was referred to as "a soap kettle in the back woods, destined to soon return to its original occupation," and none are in better position to enjoy the return of the boomerang. The partisan press even went so far as to publish a comic cut of Merchant & Co.'s establishment and delivery service, the last being pictured as one transparent horse attached to a delapidated cart and petulantly reaching for a stray fly with his starboard hind hoof. The representation of the black sheet mills and dipping departments was "out of sight," behind the office buildings, in order that foreign manufacturers might not appropriate the secrets of the business. As a matter of fact, everything in Merchant & Co.'s establishment is severely systematized. Division of stock is maintained under the supervision of the various departments, such as freight, brass and copper, foreign, financial, and bookkeeping departments. Everything converges as much to a common centre as does a railway cash system. The floor space occupied by the concern occupies about one-fifth of a square mile, all being under one roof. The concern has branches in New York, Chicago, Brooklyn, and London (Eng.), with special agents in Boston, New Orleans, Cincinnati, Louisville, San Francisco, and Denver.

Nearer Perfection.

GALESBURG, ILL., Feb. 23, 1895.

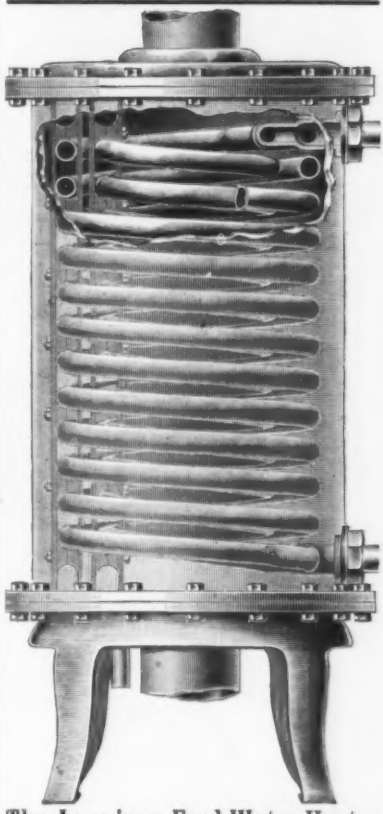
General Electric Company,
Schenectady, N. Y.

Gentlemen: In answer to yours of the 22d, inquiring as to our monocyclic system, would say, they run nearer perfection than any dynamos and motors we have had in the past ten years. The current is on continually, and the dynamos and motors both run cool and practically without attention. It is now two months since installing and there has not been a single fault.

GALESBURG GAS & ELECTRIC LIGHT CO
[SIGNED] J. K. Mitchell, Secy

—The Georgia Association of Manufacturers was recently organized at Atlanta. The officers: president, J. F. Hanson, Macon; first vice president, J. W. Robertson; second vice president, J. D. Turner; third vice president, G. R. Lombard, of Augusta; treasurer, John M. Green, Atlanta; secretary, T. H. Martin, of Atlanta; executive committee, G. M. Williams, Columbus; M. F. Amorous, of Atlanta; A. D. Hull, Rome; George W. Haskell, Savannah; James White, Athens. The association will probably put up a building of its own at the Atlanta Exposition.

THE DANFORTH BELTING CO.,
Manufacturers of
BELTING,
Aprons for **Worsted Machinery, Roller Covers and Lace Leather.**
221 Chestnut St., Philadelphia, Pa.



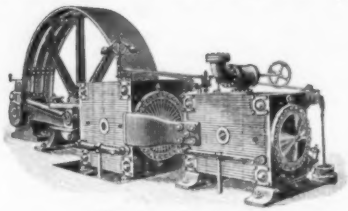
The American Feed Water Heater

The result of 14 years experience in the manufacture of various styles of heaters. We use only the best seamless **Copper Tubing.** The construction is such that there are **No Joints** inside of the shell, consequently there are **No Leaks.**

SEND FOR CATALOGUE.
THE WHITLOCK COIL PIPE CO.
MANUFACTURERS,
67 South St., Elmwood, Conn.
NEW YORK REPRESENTATIVE, F. S. Scott, 68 Cortlandt Street.
JARVIS ENGINEERING CO., Agents for N. E.

ALEXANDER BROS.
BEST OAK BELTING.
PHILADELPHIA.

FRICK COMPANY, Engineers, WAYNESBORO, PA.



(Tandem Compound.)

Eclipse Corliss Engines,

40 TO 2000 H. P., ALL STYLES.

Send for Illustrated Catalogue.

ALSO BUILDERS OF

Steam Boilers, High Speed Automatic Engines, and Ice-Making Machinery.

Steam Plants for Factories Furnished Complete.

Whitehill Engine & Pictet Ice Machine Co.,

MAIN OFFICE AND WORKS:

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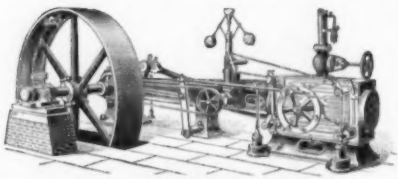

WHITEHILL

CORLISS ENGINES.

SIMPLE,
COMPOUND,
AND CONDENSING.

Iron and Brass Castings.

New York: 513 Havemeyer Building CHAS. BEHLEN.

Providence: 522 Chalkstone Ave. WM. R. HOWARTH.

Polar Belt Dressing.

THE BEST IN USE.

Put up in 25, 50, 75 and 100 lb. cans, One-half barrels and barrels.

Composition Wire Belt Lace.

It will not cut the belt or tear out at the lace holes.

For circulars and prices address,

GEO. W. SOUTHWICK & CO,. Stamford, Conn., Sole Manufacturers.

STRANGE, BUT TRUE.

These Gears Astonish the Machinery World.

They are **Noiseless and Clean.**

Requiring **No Lubricant.**

They **Outwear any Metal.**

THE

NEW PROCESS RAW HIDE CO.,

Patentees and Sole Manufacturers,

SYRACUSE, - NEW YORK.

Facts and Gossip.

—GEORGIA, Cedartown. The Cedartown Cotton Mtg. Co. has applied for a charter, with Hon. Thos. Adamson, Chas. Roberts and Chas. Adamson as incorporators.

—ILLINOIS, Metropolis. The Metropolis Woolen Mills, formerly manufacturing cassimeres, flannels, etc., have been leased to Bowker & Klutts, who will manufacture yarns.

—INDIANA, New Albany. The Tenor Mill Co. has been incorporated with capital stock of $25,000, to manufacture knit goods.

—MAINE, South Berwick. The lease of W. A. Crompton, of Boston, of the mills of the Portsmouth Co. has expired and the mills are shut down. It is expected that receiver Chas B. Gaffney, of Rochester, N. H., will sell the plant at auction in behalf of the bondholders.

—MAINE, Portland. The Portland Plush Mill has been sold to the John P. Lovell Arms Co. for $15,000. The plant will be changed over into a factory for the manufacture of boats and bicycles.

—MASSACHUSETTS, East Brookfield. The shoddy mill at this place, which we reported would be started up, will be operated by Sinister, Rice & Gibson, and will be started as soon as necessary repairs are made.

—MASSACHUSETTS, East Brookfield. The Sagendorph mill has been leased to Maguire & Gilmore, of Woonsocket, R. I., who will operate the plant in the manufacture of a fine grade of woolens.

—MASSACHUSETTS, Lawrence. Messrs. Phillips & Kunhardt, woolen goods manufacturers, have dissolved partnership, and the business will be continued by Mr. Kunhardt, under the firm name of Geo. E. Kunhardt.

—MASSACHUSETTS, North Adams. The Greylock Mfg. Co. have reduced their capital stock from $400,000 to $150,000, and increased this by new subscriptions to $250,000. They will manufacture in the future a fine grade of cotton.

—NEW HAMPSHIRE, Tilton. The proprietors of the Elm Mill have formed a corporation, and will hereafter be known as the O. & E. Morrison Co.

—NEW JERSEY, Paterson. The silk dyeing firm of Bunting & Close will hereafter be known as the Bunting & Close Silk Dyeing Co. The capital stock is $10,000.

—NEW YORK, Auburn. John J. Bockee, of New York, and others, have leased the Canoga Woolen Mill property, and will put in new machinery for the manufacture of woolen blankets. It is understood that during the summer machinery will be installed for the manufacture of knit goods.

—NEW YORK, Clintonville. Messrs. Short & Luther have leased the Clintonville Mill to W. R Steere. It is expected that J. M. Harvey, formerly of Russellville, Ark., will operate the mill.

MECHANICS.

Mechanical Drawing; Architecture; Architectural Drawing; Electricity; Steam Engineering (Stationary, Marine, Locomotive); Iron Work; Railroad, Bridge and Municipal Engineering; Plumbing; Heating; Coal and Metal Mining; Prospecting; the English Branches. DIPLOMAS AWARDED. The Largest Technical School in the World. Send for Free Circular, stating subject you wish to study.

TAUGHT BY MAIL THOROUGH PRACTICAL

The International Correspondence Schools. Scranton, Pa.

Endorsed by Board of Fire Underwriters.

SUPERIOR TO

COTTON WASTE.

Safe, Durable and Cheaper.

RAW SILK MACHINERY WIPERS.

AMERICAN SILK MFG. CO., 311 Walnut St, Philadelphia, Pa.

Agents Wanted. Beware of loose woven imitations.

A. WATSON,

PATENT EXTERNAL **Band Clamp Couplings.**

No bolts to get out of order. Best coupling for keeping a shaft which has been worn out with other couplings. I will guarantee to put my couplings on the shaft and to do the work or no pay. The couplings can be put on by any millhand in a few minutes when the key is set ready to receive the coupling.

A. WATSON, Machinist and Engineer, 2136-8 Dickerson Street, Philadelphia.

A Cheap Tin Roof

MAY remain leakless for two years. A good roof ought to last ten times as long. The cheap roof will have to be taken off and replaced in less than five years. The good roof is good for twenty.

We make absolutely the Best Roofing Tin.

THE very best. We can prove it. It is best because it will last longer than any other. Because it costs less to keep it in repair. Because it is most economical in the long run.

IT is a significant fact that no roofing plates in the United States sell beside ours at an equal price. Other tin finds a market by sinking its price to the level of its quality. If you care to be roof-wise, write to us for information.

MERCHANT & CO., Inc.,

517 Arch Street,

PHILADELPHIA, - PA.

DID YOU EVER?

Hear of a Coal-dealer recommending an INDICATOR? Send for our Catalogue of the ROBERTSON-THOMPSON "IMPROVED STRAIGHT-LINE" INDICATOR reducing wheels planimeters fine illumination oil filters & extractors shaking grate bars feed water heaters and a number of other specialties, &c.

Hine & Robertson Co. 67 CORTLANDST N.Y.

TRADE
IMPERIAL
MARK.

ESTABLISHED 1876.

BOILER COMPOUNDS

For the Prevention and Removal of Scale in Steam Boilers.

Please mail us specimen of your Boiler Scale, which we will analyze for you FREE OF CHARGE, and prepare a compound for your special case, and guarantee satisfactory results. Send us a postal card and we will call.

IMPERIAL CHEMICAL CO.,

OFFICE AND LABORATORY, - 324 ST. JOHN STREET, PHILADELPHIA, PA.

THE ORIGINAL and ONLY RELIABLE

FAUL'S PATENT NEW YORK.

LUBRICATOR CANDLE

Perfect Lubrication without Drip Guaranteed. 50 per cent. cheaper than Oils Satisfactory trial given. Send for catalogue.

W. J. FAUL, 133 Front St., New York. J. L. FISKE & CO., 4 Pearl St., Boston.

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DIXON'S PERFECT LUBRICATING GRAPHITE.

The most Marvelous Lubricant Known.
Used Dry, or Mixed with Water, Oil or Grease.

NOT AFFECTED BY HEAT, COLD, STEAM OR ACIDS.

An Interesting and Instructive Pamphlet will be sent Free of Charge.

JOS. DIXON CRUCIBLE CO. Jersey City, N. J.

....THE CURTIS....

Patent Return Steam Trap.

Will return all condensation back to the boilers, and will work with entire satisfaction with reduced pressure or exhaust steam.

The secret of its success is its Valve, which remains perfectly tight under all conditions.

It is in general use throughout the country, and has by its successful operation proved that all the claims to superiority made by its makers can be fully substantiated.

Manufactured by the

D'ESTE & SEELEY CO.,

29 to 33 Haverhill St., Boston, Mass.

NEW YORK: 109 Liberty St. **CHICAGO: 218 Lake St.**

—*SOUTH CAROLINA, Central. The Norris Cotton Mills, previously reported, have decided upon the location of their cotton mill. It will be built at Clayton Shoals, three miles from Central. It is expected that work will begin at once.

—SOUTH CAROLINA, Clemson College. The Calhoun Cotton Mills Co. has been incorporated with capital of $50,000. The incorporators are H. A. Strode, Stonewall Tompkins and C. A Welch.

—*SOUTH CAROLINA, Columbia. Application has been made for a charter for the Granby Cotton Mills Co., with capital stock of $150,000. The incorporators are: C. H. Manson, W. B. S. Whaley, M. W. Shand and Wm. H. Lyles. The new mill, site for which has been selected, will contain 30,000 spindles, and will manufacture a fine grade of cotton goods.

—*SOUTH CAROLINA, Abbeville. The Abbeville Cotton Mills, previously reported, will start the foundation for their new mill in the early fall. They will put in 10,000 spindles and 300 looms, manufacturing cotton yarn and cloth. J. C Klugh is president of the company, W. H. Parker treasurer. They would like prices on architects' and mill engineers' service, mill supplies, cotton and spinning machinery, and looms, also heating and ventilating apparatus, steam boiler and engine, feed water pumps, architectural iron works, iron roofing, water tower and tanks.

—*SOUTH CAROLINA, Blacksburg. The Blacksburg Cotton Mill Co. has been organized, and has purchased a site on which to erect a cotton mill

Metalined or Oilless Bearings

For Loose Pulleys and other bearings. Perfectly clean. No cutting or danger of fire from overheating. Send for Loose Pulley circular No. 5.

North American Metaline Co.

62 W. Av. cor. 3d St. Long Island City, N. Y.

THE J. J. RYDER CO.
DESIGNERS ENGRAVERS PRINTERS

FINE COMMERCIAL PRINTERS.
Photo Engraving in all its Branches.

Specialists in fine Machinery and general Wood Engraving, Portraits, Buildings, etc. Artistic designs in Letter and Bill Heads, Business Cards, Display Lettering for advertising purposes, etc. Best work. Lowest prices. Electrotyping at lowest rates.

210 Westminster Street, Providence, R. I

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO.
HARTFORD, CONN.

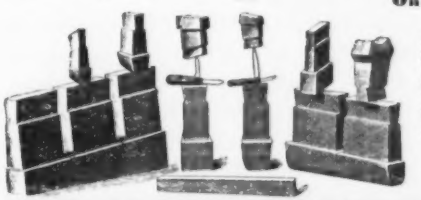
LORD'S BOILER COMPOUND

Is endorsed by the acknowledged authorities of the world; it is adopted by the United States and foreign governments, and is highly recommended in our standard treatises on steam engineering. To prove this statement, I will send one of these valuable books, costing from $1.00 to $10.00 per copy, by mail, free of charge with an order for the compound. A valuable pamphlet sent free on request. Address,

GEO. W. LORD, 316 Union St., Philadelphia, Pa., U. S. A.

MILL COGS

On Shortest Possible Notice.



I make Cogs with blank heads to be spaced and dressed after being driven; but make a **Specialty of "Ready Dressed" Cogs,** which are ready to run the moment driven and keyed. **Remember,** I make **ALL KINDS** of Mill Cogs and have special facilities which will be of great service to you **Write at once** for circular and instruction sheet; **free.**

N. P. BOWSHER,
South Bend, Ind.

LOCKE REGULATOR CO.

REGULATORS FOR EVERY PURPOSE FACTORY SALEM, MASS. SEND FOR CATALOGUE WITH PRICES AND DISCOUNT

—NEW YORK, Mohawk. The name of the Knitting Co. of Mohawk, Ltd., will be changed to the Paragon Knitting Co., and will continue in the manufacture of men's and children's knit underwear.

—NORTH CAROLINA, Monroe. It is announced that the Monroe Cotton Mills will be sold at public auction on July 31st, to satisfy indebtedness to the amount of about $54,000.

—PENNSYLVANIA, Reading. The firm of I. C. Hunsicker & Co. has been dissolved, Mr. Hunsicker retiring. The business will be continued by Samuel H. Kutz, under the name of Reading Knitting Mills.

—RHODE ISLAND, Newport. The plant of the Newport Elastic Fabric Co. has been purchased by Mr. Matthew Campbell, of Brooklyn, who will operate it as the Campbell Web Co. Mr. Edward F. O'Brien will be the manager of the works, and J. J. Nealon, of New York, will act as selling agent for the company.

—TENNESSEE, Chattanooga. Messrs. Campbell & Hutchinson, who were to build a woolen mill at East Lake, it is reported, on account of a misunderstanding, have decided to go to Rossville, Ga., instead.

—VIRGINIA, Portsmouth. The plant of the Portsmouth Cotton Mfg. Co. has been leased to John H. Hume, John I. Thomas, F. D. Gill and others, for a term of ten years. They will put in machinery, and put the plant in operation.

—WISCONSIN, Mineral Point. The Mineral Point Mfg. Co. has been organized with H. N. Snow as president, and J. Penhallegon as treasurer. The new company will put the plant in operation.

Fires.

—CONNECTICUT, Stafford Springs. The shoddy mill and storehouse of Rawitzer & Bro. have been destroyed by fire. Loss $50,000. No insurance. Will rebuild soon as arrangements can be made.

—MAINE, Augusta. Fire in the picker room of the Edwards Mfg. Co. recently did damage to the extent of about $4000.

—MASSACHUSETTS, Mansfield. The wool carbonizing plant of J. Gledhill has been destroyed by fire. Loss estimated at from $1500 to $2000.

—MEXICO, City of Mexico. The La Fama Cotton Mills were recently destroyed by fire. Loss $125,000.

—MASSACHUSETTS, Charlton City. The picker and stock rooms of Akers & Taylor's woolen mill were recently destroyed by fire. Loss about $6000. Covered by insurance. Will be rebuilt at once.

—MASSACHUSETTS, Jefferson. The shoddy mill, owned by the L. M. Harris Mfg. Co., and operated by William Day, was recently destroyed by fire. Loss $800. No insurance.

—MASSACHUSETTS, Methuen. The shoddy mill of Henry Klous was recently injured by fire to the extent of $8000. Fully insured. Mill is being rebuilt.

—OHIO, Toledo. The Enterprise Knitting Works, Roth & Friedman, proprietors, have been totally destroyed bo fire. The loss is estimated at $140,000. Partially insured.

—PENNSYLVANIA, Philadelphia. Messrs. Klouder & Brother's Dye Works, on Leamy and Lippincott Sts., were recently injured by fire to the extent of about $5,000.

—TENNESSEE, Elizabethton. The Doe River Woolen Mills recently suffered a loss of about $3500 by fire.

IMPROVED CEMENT LINED

WROUGHT STEEL PEN STOCKS.

Have you a water power that you wish to develop? or a defective wooden penstock that you must repair or replace? Then secure descriptive circular and price of my steel penstocks. They are cheaper than wood, they are indestructible, they are absolutely water tight; they are constructed on the ground where they are to be used, therefore can be adapted to the most difficult places. They will stand any head of water, they can be made of any size desired; they have been tested and approved for years. For full information and price, address the manufacturer,

GEO. DALRYMPLE,

Lock Box 466. Fair Haven, Vt.

—*SOUTH CAROLINA, Hampton. A charter has been granted to the Hampton Cotton Mills The incorporators are W. F. Cummings, W. J. Goodings, J. A. Lightsey and others. The capital stock of the company is $50,000.

—SOUTH CAROLINA, Parksville. A cotton mill company is being organized at this place, consisting of D. A. J. Bell, W. J. Tolbert, W. B. Parks and others.

—*SOUTH CAROLINA, Prosperity. The Prosperity Mills have applied for a charter, having a capital of $50,000, with privilege of increasing to $150,000. They inform us that they will build a new mill, and put in from 5000 to 10,000 spindles, using steam power.

—*TEXAS, Austin. Mr. G. N. Todd writes us that he with others will build a cotton mill to contain 15,000 spindles and 350 looms, on which they would like prices. They are negotiating for water power from the Austin dam.

Woolen.

New Mills.

—MINNESOTA, Pillsbury. F. W. Mattock has commenced the construction of a building to be used as a woolen mill. He expects to have it completed and ready for machinery in about a month.

—*PENNSYLVANIA, Bloomsburg. The Magee Carpet Works, recently reported as incorporated, inform us that they will build a new mill for the manufacture of tapestry and velvet carpets. They will put in 91 looms, employing 100 hands.

—Amos Abbott & Co., Dexter, Me., have added one set of cards (60 inch), and one pair of mules; also a new engine and boiler.

Enlargements and Improvements.

—MAINE, Pittsfield. The Waverly Woolen Co. have recently added four sets of cards, and will later put in two additional sets and other machinery.

—MASSACHUSETTS, Cherry Valley. An addition will be built to the dyeing department of the Valley Woolen Mill, Channing Smith, proprietor. The new structure will be 100x45 feet.

—*MASSACHUSETTS, Cherry Valley. Twelve new looms will be placed in the new weave room which we recently reported the Olney Bros. were building.

—*MASSACHUSETTS, Rochdale. Messrs. Comins & Co. inform us that the addition recently reported will be 60x44 feet in size, one story, and that six new looms will be added.

Failures and Suspensions.

—NEW YORK, Amsterdam. Chas. E. Warner, knit goods manufacturer, has made an assignment for the benefit of his creditors, to Thos. Liddle. The liabilities are placed at $71,000; assets nominally about $90,000. This failure was precipitated by the sudden death of Mr. Warner's father, a partner in the concern.

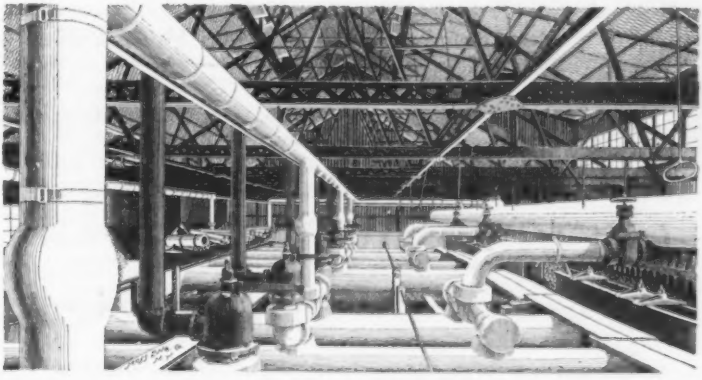
—NEW YORK, Cohoes. Pilling & Scullen, knit goods manufacturers, have made an assignment for the benefit of their creditors to Thomas Slavin. The liabilities are $15,000; assets about $10,000.

—RHODE ISLAND, Washington. P. S. Peckham & Co., manufacturers of woolen yarns, have made an assignment to Leander R. and Walter A. Peck, for the benefit of their creditors.

CHAS. M. JARVIS, Pres. & Chief Engineer. BURR K. FIELD, Vice-President. GEO. H. SAGE, Secretary. F. L. WILCOX, Treasurer

THE BERLIN IRON BRIDGE CO.,

ENGINEERS, ARCHITECTS, AND BUILDERS OF Iron and Steel Bridges and Buildings.



INTERIOR OF BOILER HOUSE, FOR CHENEY BROS., AT SOUTH MANCHESTER, CONN.

The above illustration is taken direct from a photograph, and shows the construction of a Boiler House designed and built by us for the well known silk manufacturers, Cheney Bros., at South Manchester, Conn. The building is 48 ft. in width and 74 ft. in length, with brick walls to the height of the top of the boilers, above that the construction is entirely of Iron, the Roof being covered with our Patent Anti-Condensation Corrugated Iron Covering which we guarantee not to drip in the coldest weather. The construction is absolutely fire-proof.

☞ Send for Illustrated Catalogue.

OFFICE AND WORKS:

EAST BERLIN, CONN.

Capital, $1,200,000.

100,000 SPINDLES.
Weekly Product 120,000 lbs.
14's to 160's.

HIGH GRADE

Cotton Yarns,

SPECIALLY ADAPTED FOR

Silk, Plush, Upholstery & Hosiery

MANUFACTURERS.

American Peelers. Sea Island. Egyptian Oottons.

Superior Qualities Combed and Carded—Furnished in singles, 2, 3, 4 and 6-ply chain warps, skeins, beams, spools, tubes, cones and Lisle Thread yarns.

Cops for Weaving and Twisting. Cops for Hosiery.

GLOBE YARN MILLS,

Fall River, Mass.

ARNOLD B. SANFORD, - - Treasurer.

Arnold B. Sanford, *Pres.* Arthur H. Mason, *Treas*
Capital Stock, $500,000.

Sanford Spinning Co

FALL RIVER, MASS.

30,000 Spindles. Weekly product, 50,000 pounds 14s to 40s.

NOVELTY COTTON YARNS,

FROM AMERICAN PEELERS AND EGYPTIAN COTTONS.

OUR SPECIALTY: Superior qualities of Hosiery Yarns, Natural Shades of Cottons, and in Colors, Jaegers, Mixes, and Bleached, Hosiery Cops on Long Tubes, Skeins, Tubes, Cones and Lisle Thread Yarns. Furnished in Carded and Combed Qualities in Singles, 2, 3 and 4-plies.

YARN DEPARTMENT.

The Eastern Yarn Market.

Double and Single Roving White Cop Yarn. Prices for white yarn continue firm, and spinners refuse to make concessions, consequently, few new orders are being placed. Knitters are working up what yarn they have on order, and are trying to get an advance. Underwear buyers are either waiting for the market to get lower, or are placing orders with manufacturers fortunate enough to get covered before the advance in cotton. Of course some orders will always be placed, whatever the condition of the market, consequently, a few orders are forthcoming for 1/7s and 1/8s white cop, for the backing of fleece lined underwear, and some orders are being placed for white yarn as a substitute for Egyptian, knitters dyeing the shirts Egyptian color. Spinners are inclined to await developments, and are not pushing for orders. In the words of one large spinner, "They are not in business for their health, but wish to get, at least, cost for their yarns."

Buyers waiting for lower prices will be fortunate if they get from knitters the garments already bought. The cheapest classes of hosiery are doing very poorly. The rubber boot trade is placing orders for much cloth, which is taking considerable yarn. Southern mills are holding for the highest prices, while New England mills are well supplied with cotton. We note one large consumer of yarn, who made, at least, $8000 out of the advance. Trade is quiet. Prices higher and firm.

Combed Egyptian and Allen Seeds. Spinners are very busy on combed Egyptian yarn, in 1/18s and 1/20s, for balbriggan trade; spinners are getting orders at the advance. Trade is nearly over on light weight garments, and business is starting up on heavy numbers. In Egyptian yarn an advance in price has been absolutely necessary, as Egyptian cotton ranges from 13 1-2 to 14 1-2 cents a pound. We believe the sharp advance will curtail the use of Egyptian cotton in certain grades of underwear, as less yarns will be substituted. Spinners are disgusted at the prices they have been getting, and claim there has been no money in making yarn. Knitters are all busy on orders. Buyers are keeping out of the market.

Colored Cotton Yarn. Spinners are all running, and are refusing orders, except at an advance, which knitters are slow to concede. Buyers are dropping out of the market at any advance. The mills all had some yarn ordered, but many of the smaller mills have been very badly caught on prices. When the advance came no one believed in it, and many of the smaller mills booked orders for garments, but did not cover for yarn. It is now found to be impossible to get yarn at a price which will enable them to get out whole. Many have been the devices to get out of the "hole." Some withdrew their Egyptian samples and substituted a colored Egyptian garment; some withdrew their Egyptian line altogether and made Jaeger and silver grey. It is for this reason, especially, that spinners of colored yarn will be busy. Many sweaters are being made. Flat goods manufacturers are buying considerable 1/20s and 1/30s. Much yarn is being put into hosiery.

WOOLEN YARN.

Spinners continue busy, and are getting orders freely. With the present demand, all mills are running, and have business enough to last until August and September. The demand for woolen spun yarn by weavers, has, this season, been exceptionally large. One large manufacturer tells us he has made more wool cheviots than ever before, and consequently, he has been forced to buy wool spun yarn outside his regular supply. Several large weavers have purchased from 100,000 to 150,000 pounds

Combined Capital Stock, $2,250,000 Total Spindles, 170,000

WM. D. HOWLAND, Treas. BYRON F. CARD, Agent.

New Bedford Mfg. Co.,
Howland Mills Corp'n, *
Rotch Spinning Corp'n.

High . . . . Grade Cotton . . . . Yarns.

Single or Twisted,
Combed or Carded,
Hosiery Yarns,
Chain Warps,
Skeins, Spools
and Cops;
also on
Beams

FROM 4's TO 120's.

BYRON F. CARD, - Selling Agent,

New Bedford, Mass.

outside. Hosiery manufacturers have been in the market extensively of late, and this trade, together with that of rubber boot lining, is making business fairly active. Prices continue low.

WORSTED YARN.

Spinners of the finer grades sizes of worsted yarn are slack, and mills are trying for orders. Weavers are attempting to force down prices, but are not succeeding. Many large manufacturers, finding that they cannot get a reduction in the cost of labor, are buying much foreign yarn. We note that cheviot yarn is selling well, as is English Lustre yarn for Astrachans. Mohair yarn is in brisk demand in 1/20s and 1/30s, for dress goods. From what we hear, domestic manufactured cloths of all kinds are in a stronger position to-day, than ever. Many foreign samples have been shown. The goods are now being delivered. In some instances, where 65 picks to the inch were in the samples, the actual deliveries had only 50 or 60 picks. The cloth was well finished, but when worked up showed the great imperfections. With foreign yarns, it has been different, and many sizable orders have been placed. The fine coating mills are placing few orders for yarn. All the mills have covered themselves for the remainder of the heavy weight season, and do not know what the requirements will be for next season's light weights. Much 2/40s and 2/48s will be used.

It looks as if the backbone of the Olneyville strike had been broken. Weavers are returning to their looms, and it will not be long before all the mills will be in full operation. The Atlantic Mills have posted notices, refusing to have anything to do with any one belonging to the Textile Union, or with any of the strike leaders. Many tops are being sold. Lustre yarn for Astrachans is being used to a great extent, and if the number of sample pieces indicate what the actual trade is going to be, mills on this class of goods will be unable to meet requirements. It is a fact, that on sample pieces mills ran nights to get cloth out. We hear from a

GRANT YARN CO.,
COMBED AND CARDED COTTON
YARNS 40s and above. AND
FITCHBURG, MASS. WARPS

O. H. SAMPSON & CO,
YARNS,
BOSTON, 67 Chauncy St.
NEW YORK, 58 & 60 Worth St.
PHILA. 206 Chestnut St.

JAMES E. MITCHELL & CO.,
Commission Merchants.
122 & 124 Chestnut St., Philadelpia, Pa.
51 & 53 Summer St., Boston.
Cotton, Woolen & Worsted Yarns.
All numbers on Hand and Made to Order.

SAWYER, MANNING & CO.,
YARNS,
86 & 88 Franklin St., NEW YORK.

J. H. LANE & CO.,
Commission Merchants.
COTTON and JUTE YARNS
110 Worth St., NEW YORK.
24 Kingston St., BOSTON.
151-53 Fifth Ave., CHICAGO.

ALEX'R KING & CO.
YARNS.
FINE IMPORTED YARNS A SPECIALTY.
54 Leonard St., New York.

TILLINGHAST, STILES & CO.
COTTON YARNS
ALL NUMBERS.
Chain Warps, Skeins, Cops, Cones, Beams, Spools, Colored and Grey Yarns. Hosiery and Combed Yarns.
20 Market Square, Room 53. Providence, R. I.

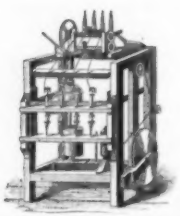
O. S. HAWES & BRO.,
COTTON and SILK YARNS,
All Forms and Numbers.
Imported Yarns a Specialty.
50 Bedford St. Fall River, Mass.

HADLEY
SPOOL COTTON AND FINE YARNS
COMPANY
COTTON SPINNERS.
MILLS AT HOLYOKE, MASS.

SPINNERS OF
FINE COTTON YARNS
30s TO 100s.
Gray, Bleached, or Colored. On cop, in skein on spools, cones or tubes.
Fine Cotton Warps, single and two-ply, in chain, etc.
95 Milk Street, BOSTON.

JAMES CHADWICK & BRO., Limited.
SPINNERS OF
no Egyptian and Sea Island COTTON YARNS.
2, 3, 4 and 6 ply. Cop, Skein, Warp or Cone.
Mills: Jersey City, N. J.
New York: Cable Building, cor. Broadway and Houston Sts.
Philadelphia: 302 Chestnut St.

THE WILLIAM CLARK COMPANY,
WESTERLY, R. I.
Mills equipped with the latest and most improved machinery.
Combed Egyptian from No. 20s to 100s. Combed Sea Island from No. 40s to 200s.
Also 2, 3, 4, 5 ply and 6, 9 and 12 ply cable laid.
Hosiery Yarns on Cops Tubes or in Skeins, Grey, Bleached or Dyed. (Fast Colors.


Arkwright's Original Spinning Frame, invented 1768.

ESTABLISHED 1769.
SIR RICHARD ARKWRIGHT & CO., Ltd.
Manufacturers . . of . . COTTON YARN.
Single Yarns Carded and Combed. 2 ply CASSED YARNS, suitable for the silk, lace and suspender trade. Also WARPS from 60s to 200s.
Main Office for U.S.: 69 MERCER ST., near Broome St., NEW YORK.

Hosiery AND Weaving Yarn
ALBERT IVINS GROLL, BOSTON.

The J. R. Montgomery Co.,
Manufacture
WINDSOR LOCKS, CONN.,
High Grade COTTON WARPS, IN FAST FANCY COLORS.
PRINTERS of COTTON WARPS, Wool, Worsted and Silk Yarns.
NOVELTY YARNS OF ALL KINDS.
BOUCLÉ, BOURITTE, FLAKE AND SLUB YARNS.

European traveler that throughout England, France and Germany, mills are all busy running on goods for the American markets.

Prices as below:

DOUBLE ROVING WHITE COP YARN.

11s and 12s	16 cts.
16s	17 cts.
20s	19 cts.

Jaeger and Camels Hair,

10s to 12s	16½ cts.

Cones 1 cent extra.

Other colors quoted on application.

Egyptian Combed.

1/10s to 12s	24 cts.
1/20s	26 cts.
1/34s	30 cts.
1/40s	33 cts.
1/45s to 1/50s	37 cts.

Cones extra price.

ALLEN SEED COMBED.

1/10s	20 cts.
1/40s	32 cts.
2/40s	37 cts.

WOOLEN YARN.

Will quote on inquiry, as there is too great diversity to give satisfactory quotation.

WORSTED YARN.

Fine Australian.

2/40s	75 to 80 cts.

Other numbers in proportion.

Half-blood Domestic.

2/40s	.65 cts.

DOMESTIC.

1/4 Blood,

2/28s, 24s, 18s	50 cts.
2/32s	53 cts.

3/8 Blood,

2/32s	58 cts.
2/28s, 24s	58 cts.

1/2 Blood,

2/22s, 28s	62 cts.

The Philadelphia Yarn Market.

As spinners are using up old stock and find they have to pay stiffer prices for new cotton, they are insisting on more money for their yarn, and while the upward movement comes in a gradual way, some advance is scored every week. The only thing that keeps back an advance of 1 1-2 to 2 cents a pound all along the line, is, that there are still some odd lots in the market, and some spinners have still cotton enough to last them for a considerable time.

KERR THREAD CO.
—SPINNERS OF—
Fine Combed Sea Island **COP SINGLES**
All Numbers, 30s to 150s.
Fall River, Mass.

HARDT, VON BERNUTH & CO.,
YARN IMPORTERS
Sole Agents for
JOHN WULFING & SONS.
Worsted Yarns.
SIR TITUS SALT. BART. SONS & CO., Ltd.,
Mohair, Cashmere and Alpaca Yarns.
W. HOLLINS & CO., Ltd.,
Merino and Mixed Silk and Wool Yarns.
McCONNEL & CO., Ltd.,
Lace Curtain and Thread Yarns.
BENT, LEY SILK MILLS, Ltd,
Spun Silk Yarns.
477 Broome Street, New York.

BALE, STUART & CO.
Spun Silk, Cotton and Worsted **YARNS.**
31 George St., MANCHESTER, ENG.
51 Greene St., NEW YORK

BUCKINGHAM & PAULSON,
COMMISSION MERCHANTS,
Yarn and Warps,
83 Leonard St., NEW YORK.
118 Chestnut St., PHILADELPHIA.
211 Jackson St., CHICAGO.

JAMES WHITESIDE,
Importer and Commission Agent,
Spun and Tussah Silk, Cotton Worsted, Mohair, Linen and Jute **Yarns.**
96 Spring St., NEW YORK.

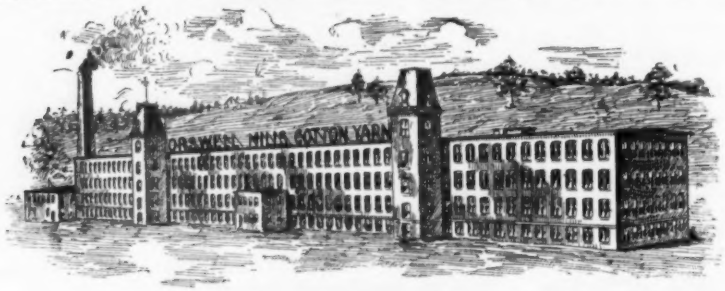
ABEGG & RUSCH,
WORSTED YARNS
Dry Spun, Nos. 36s to 100s.
COTTON YARNS
Nos. 12s to 120s.
92 GRAND ST., NEW YORK.

WOOLEN YARNS.
All grades Woolen, Mixed and Merino yarns.
15 SETS CARDS.
EDWARD M. ROCKWELL,
LEOMINSTER, - MASS.

CAPACITY, 50,000 Spindles.

ORSWELL MILLS

FITCHBURG MASS.



COMBED OR CARDED

COTTON YARNS

In Chains and Skeins, on Balls, Beams, Spools—single or twisted.

GREENE & DANIELS MFG. CO.,

Combed and Carded

Yarns, Threads, Twines and Chain Warps,

Furnished in any manner desired by the trade.

PAWTUCKET, R. I.

High Grade **COTTON YARNS** No. 4 to No. 20

FOR

HOSIERY OR WARPS.

BOSCAWEN MILLS, - Penacook, N. H.

Cotton Yarns AND **WARPS** Of Every Description.

James F. White & Co.

COMMISSION MERCHANTS,

54 an 56 Worth St., NEW YORK.
228 Chestnut St., PHILADELPHIA.

BURLAPS all WIDTHS and WEIGHTS.

PLAIN AND FANCY PATTERN

Cotton Warps,

WHITE, MIXED AND COLORED.

For SATINETS, BLANKETS, ETC.

WHITTIER COTTON MILLS,

LOWELL, MASS.

Littlefield Manufacturing Co.

K. K. HOSIERY YARNS, COPS, CONES & SKEINS.

Threads for Spooling. Single and Double Yarns for Silk, Woolen or Cotton Goods.

PAWTUCKET, R. I.

Egyptian yarns have risen so rapidly in value, that knitters are discontinuing their use. It is impossible for them to pay the present advance, until they get the advance on their goods. We quote:

WARPS.

20/1	13 cts.
22/1	13½ cts.
26/1	14 to 14½ cts.
20/2	14½ cts.
12/2	13 to 13½ cts.
30/2	18½ cts.
30/1 Southern	16½ cts.
30/1 Eastern	18½ to 19 cts.

SKEIN.

26s filling	13¼ cts.
20s filling	12½ to 13 cts.
19s soft	13 to 13½ cts.
4s to 10s soft	12 cts.
10s to 12s hard	11½ to 12 cts.
10s to 12s soft	12½ cts.
14s hard	12 to 12½ cts.
14/2	12¼ to 13 cts.
20/2	14 to 14¼ cts.

SOUTHERN CONES.

6s to 8s	12¾ to 13¼ cts.
10s	13 to 13½ cts.
12s	13¼ to 14 cts.
16s	14¼ to 15 cts.
20s	16 to 17 cts.

Frank E. Patterson, Prest. Oscar W. Wood, Treas.

Germantown Spinning Co.

COTTON CARDED

HOSIERY YARNS

In numbers from 6s to 26s.

Germantown, Philadelphia.

DANA WARP MILLS,

WHITE and COLORED **Cotton Warps** Nos. 5s to 50s.

TOWELS AND GRAIN BAGS. WESTBROOK, MAINE.

GEO. FELL & SON,

LEATHER MANUFACTURERS,

Bolton, England.

SPECIALTY:

ROLLER SKINS

PERSIAN, FOR EGYPTIAN AND SEA ISLAND COTTON YARNS AND FINE COUNTS

WELSH, FOR AMERICAN COTTON YARNS AND COARSE COUNTS.

REGISTERED TRADE MARK

Cable and Telegraphic Address,

"PELICAN BOLTON"

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REGISTERED TRADE MARK

W. WARREN THREAD WORKS.

Westfield Mass

Manufacturers of

Cotton Yarns and Polished Threads. Colored Yarns and Threads on Cones a specialty.

Samples sent on application.
Correspondence solicited.

. . . NO NEED . . .
TO REWIND
for the
KNITTING MACHINES.

FOSTER MACHINE Co.

Foster 1894
Eighteen Ninety Four.
18-90-4
Cone Winder.

WESTFIELD, MASS.

. . . SAVES . . .
WASTE,
POWER,
CASES,
LABOR,
. . MONEY. . .

ADVANTAGES:

Our machines will wind Cones as well as Tubes.
Cones and Tubes can be wound at the same time.
One side will wind Tubes while the other winds Cones.
They can be used as a Doubler up to six ends.
One side can run as a Doubler while the other winds single.
One side can run from Skeins onto Cones or Tubes while the other winds single or double.
One side can be run at high speed while the other runs slow.
One side can remain idle while the other runs.
It takes less than half the POWER to run our Winders than is required by any other.
They will give 30 to 50 per cent. more, and in some cases double, production; do better work and make no stretch on the yarn.
25 per cent. more yarn can be packed in the same sized case used for Cones wound on other winders.
We build the only Cone Winder made in America, for winding onto paper Cones.
By buying our machines you get the best in the world.
If you are interested we shall be pleased to correspond with you giving all desired information, circulars and prices.

GUARANTEE.

We GUARANTEE that TWO of our Winders will give as much production as THREE of any other make and show better work.

Therefore it is a saving in FIRST COST to buy our Winders, and a continual saving of the floor space of one machine and the labor required to run it.

Besides, if saving of power is any object, that item alone is worth considering.

FOSTER MACHINE CO.,

WESTFIELD, MASS.

MALLISON ROPE WORKS, - ESTABLISHED 1827.

JOHN M. HODSON,

Single and Double Loop Bands for WORSTED and COTTON SPINNING.

ROPE, TWINES AND COTTON BANDINGS.

MANAYUNK, - PHILADELPHIA.

RICHARD A. BLYTHE,

Fine Nos. a Specialty, 20's to 150's. Carpet Yarns and Warps, 4's to 20's.

Cotton Warps and Yarns,

114 Chestnut St., Philadelphia, Penn.

C. MOORE & CO.,
MANUFACTURERS OF
TWINES, THREADS AND YARNS.
Jacquard Harness Twines of all kinds on hand and made to order.
12 SOUTH FIFTH STREET
Philadelphia.

KILBURN, LINCOLN & CO.,
Manufacturers of
COTTON LOOMS,
TURBINE WATER WHEELS,
Shafting, Gearing, Calenders, Manglers, Hydraulic Presses, Machinists' Tools, Steam Engines, Pipe, Heavy Castings, and Machinery generally.
FALL RIVER, MASS.

For Foster and other Winders,
CONE TUBES,

Manufacturer of all kinds of
Paper Cop Tubes,
Parallel Tubes, Taper Tubes,
Special Tubes to order.

J. McCAUSLAND,
33 Canal St., PROVIDENCE, R. I.

Philadelphia Textile School

OF THE

Pennsylvania Museum and School of Industrial Art.

The only school in Am rica which TEACHES THE DESIGNING AND MANUFACTURE OF ALL CLASSES OF TEXTILES.

Carding, Spinning and Finishing,
Chemistry and Dyeing.

Applications should be sent in at once for the term beginning October 1st, 1895. For circulars and other particulars, address,

E. W. FRANCE, Director,

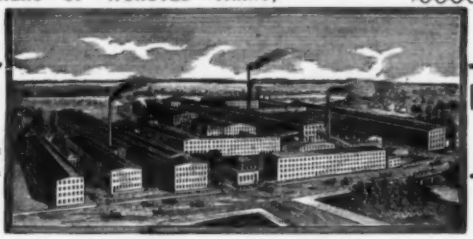
Broad and Pine Streets, - Philadelphia, Pa.

NATIONAL AND PROVIDENCE WORSTED MILLS,

CHAS. FLETCHER, President.

MANUFACTURERS OF WORSTED YARNS, SPUN ON THE

ENGLISH SYSTEM.



FRENCH SYSTEM.

Worsted Yarns in White, Mixed and Fancy Colors, on Bobbins, Dresser Spools and Skeins.

VALLEY STREET, PROVIDENCE, R. I.

ALLEGHENY WORSTED MILLS,

Thomas Wolstenholme, Sons & Co., MANFRS. OF

Worsted YARNS,

ALL NUMBERS SINGLE AND TWO-PLY,

Sell Direct,

on Cop or in Skein, for Weaving and Knitting Purposes, in White, Natural & Fancy Mixes.

Office and Mills: Allegheny and Trenton Avenues, Phila., Pa.

CRANSTON WORSTED MILLS

CHARLES B. ROCKWELL, Treasurer, . . Manufacturers of

Fancy Yarns, Loops, Knots.
Spirals in Mohair and Worsted. Worsted
Tops, Mohair Tops and Rovings; also Worsted Yarns.

DYERS OF YARNS AND SLUBBING FOR THE TRADE.

BRISTOL, R. I.

CHAUTAUQUA WORSTED MILLS

Medium and Fine Grade Weaving and Knitting Yarns.

GOODWILL, ASHWORTH & CO., Jamestown, N. Y.

YARNS

SOLIS - - BOSTON.

179 Devonshire Street.

ANDREW J. SOLIS, Jr. & CO.

GUERIN SPINNING CO.

JOS. GUERIN, Agent

Custom Spinning of Woolen and Merino Yarns of all descriptions (specially in fine numbers) spun according to the Belgian system.

92 South Main St., - Woonsocket, R. I.

JAS. W. GREAVES & CO.

Worsted and Woolen

Providence, R. I. YARNS.

24s	16½ to 17½ cts.
26s	16½ to 17½ cts.

SOUTHERN COPS.

6s to 8s	11½ to 12 cts.
10s	12 to 12½ cts.
12s	12½ cts.
16s	13 to 13½ cts.

MIXED COLORED CONES.

6s to 8s	15 cts.
10s to 12s	15½ to 16 cts.
16s	16½ to 17 cts.

SKEIN.

8/3 carpet	11½ to 12 cts.
8/3 slack	12 to 12½ cts.
9/4 slack	12 to 12½ cts.
60-yd double reeled	6 cts.
10s double reeled	12½ cts.
16/3 slack	13 to 13½ cts.

EASTERN COPS.

26s shuttle	14 cts.
40s shuttle	17½ to 18½ cts.
12s shuttle	13 to 13½ cts.
10s to 12s hosiery	14 to 14½ cts.
14s	14½ cts.
16s	14½ to 15 cts.
20s	17½ to 18 cts.
24s	18 to 18½ cts.

Cones, 1 ct. to 1 1-2 cts. above cops.

Skein, 1-2 ct. above cops.

EGYPTIAN (CARDED).

6s to 8s	19½ to 20 cts.
11s to 12s	21 to 22 cts.
14s to 17s	22 to 22½ cts.
17s to 18s	22½ to 23 cts.
20s	23 cts
22s	23 to 24 cts.

Egyptian (combed), 4 to 5 cts. higher.

The demand for crinoline yarn has ceased, and stocks are being held for next fall.

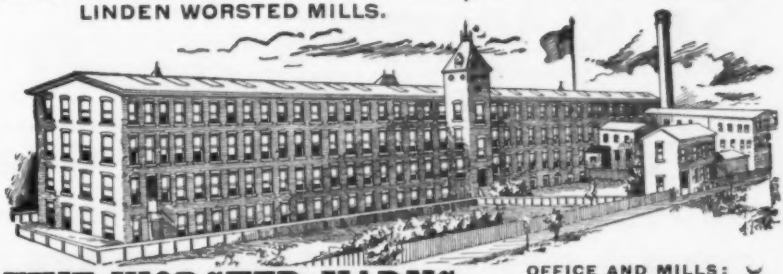
Woolen and merino yarns are being sampled at extremely low prices. Fine quality 50 per cent. merino, in gray, 42 cut, being worth about 45 to 50 cts.

Worsted still in demand at former low prices.

—The M. A. Furbush & Son Machine Co., of Philadelphia, makers of woolen machinery and the celebrated Murkland ingrain carpet loom, reports a large increase in its export business to Mexico and South America.

HOWLAND CROFT, SONS & CO.

LINDEN WORSTED MILLS.



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OFFICE AND MILLS:
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Wesendonck, Lorenz & Co.,

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FOREIGN WOOLEN, MERINO, WORSTED, **Yarns** for Hosiery, Underwear, Dress Goods, Men's Wear.

JOHN PATON, SON & CO.,
WOOL and WORSTED SPINNERS,
ALLOA, - SCOTLAND.

HOSIERY YARNS in Shetland, Natural and Fancy Mixtures. Delivered either in Hank Scoured or Tub Unscoured.

Our Specialty—Scotch Mixtures for Sweaters, Bicycle and Golf Hose, Gloves and Mits. Sole Agents U.S.A. J. S. Lesser & Co., 396-398 Broadway, New York.

WEAVING and HOSIERY YARNS.

We Buy for Cash

WARPS, COPS, TWIST and SOFT SKEINS, Single, Double, 3-ply, 4-ply, etc.

COLORED YARNS for HOSIERY

on Cones, a Specialty.

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Knitting Silks, Ribbons AND Piece Silks

USED FOR TRIMMING KNIT GOODS.

TRAMS, ORGANZINES and SPUN SILKS, in the Hank, or on Spools or Cones, for Manufacturers' Use. Silks for Special Purposes Made to Order.

MILLS: South Manchester and Hartford, Conn.

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FOR THE HOSIERY, WEAVING AND KNITTING TRADE GENERALLY,

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SPUN SILK YARNS AND NOILS

Importers of European and Asiatic Raw Silk.

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MANUFACTURERS desiring to purchase **RAW STOCK** in large or small quantities, can be supplied.

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Also Agents for the Celebrated Patent Metal Packing

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MANUFACTURERS OF

Novelty Yarns, Silk Noil Yarns, in Fast Colors AND White.

Mills, Frankford, Pa. Office, 229 CHESTNUT ST., PHILA.

The Wool Market.

Perhaps the condition of the wool market may best be summarized by saying that the aspect it presents is far from inspiring. When there is an improvement in prices abroad, an upward movement may be expected. Then, and not till then, better prices may be looked for. Early June finds the market well maintained, considering such depressing factors as the large withdrawals and disappointing prices at the London sales, the great stock in storage in Chicago, and the sharp cut of 2 1-2 and 5 cents a yard, made by two big carpet manufacturers. The first step toward the settlement of the Olneyville strikes is the only notable feature of bullish import at this writing.

Yet, in spite of the much complained of dullness, business has footed up surprisingly well, particularly in the Boston market. In view of the general growling over exchanges, it is worth while to note actual May sales at principal markets the last four years.

	Domestic.	Foreign.	Total.
1895	10,765,150	10,035,600	20,800 750
1894	9,622,315	5,877,600	1,549 915
1893	5,998,500	4,239,500	10,238,000
1892	10,891,700	9,267,650	20,159,350

To the new clip, which is now beginning to move freely, is principally due such increase as is shown in activity, while the general undertone of strength in business, caused by the supported advances in such staples as hides, shoes, cotton, petroleum, wheat, corn, lard, sugar, pig iron, steel, nails, wire, copper, lead, iron, quicksilver, etc., has done much toward maintaining confidence.

The decrease in clip in several states, notably Texas and Ohio, cuts little figure, considering the last two year's surplus of production; also, that the world now comprises the wool market. Such improvement as has lately been manifested in the London market, has been entirely due to improved selection.

Prices are being held just above the reach of manufacturers, and those located in the East, are busily engaged in experimenting with foreign substitutes, being determined they will not pay prices asked at the seaboard. Judging from what has come forward, the new clip is of inferior quality.

Some disposition is shown to hold back the new clip, on the principle that values are around bottom, making only upward movement possible.

When the cloaking season begins, more or less stiffening will be in order.

Australian and South American wools, have of late been moderately active.

The Cotton Market.

Consumers of the raw material are apparently losing no sleep over maintained advances. A fairly satisfactory volume of business in futures around the opening of June, does not lend any appreciable improvement to the actual goods. The speculative fever is slowly, but surely, wearing itself out.

Traders would be glad to have the market settle quietly, without much downward movement. This is improbable, however, considering that there has been no decided reaction during the advance. Recent acreage reports fully bear out the estimated decrease of 10 per cent., which we gave last month, while it is agreed to that the season is two weeks behind time. Of course, the later the season, the greater probability of damage.

The recuperative power of the cotton plant, with even late return to favorable conditions, is so remarkable as to fully offset excessive rains, cold winds, mildew, the weevil, lice, the sharp-shooter insect, and all the other ills the crop is heir to. Several weeks must pass before definite information will be forthcoming as to the yield an acre, which constitutes the real question. It is not to be regretted that the speculative crowd is getting down to a more conservative basis. Outsiders, of late, feel content with their previous investments, which is equivalent to saying that buying orders have been curtailed.

Exports during the latter part of May were not half bad, being scarcely sur-

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Fancy Colors in **Wool Extracts** a Specialty.
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Make all kinds of
CLOTH WASHERS
for Spinning, Roving, Drawing and Reeling.
In this business since 1861 in Bradford, England, and thoroughly understand all requirements of the trade.

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MANUFACTURERS OF
WHITE AND COLORED COTTON **WARPS**
Nos. 6s to 30s,
On Beams, Jack Spools or in Chain
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FALL RIVER, - MASS.,
Manufacturers of
COTTON WASTE
for all purposes. Batting Stock, Ball Wick, Mop Yarns, Etc. Contractors for Cotton Mill Waste of all kinds.

BARRY, THAYER & CO.,
Cotton Commission Merchants,
32 INDIA ST., - BOSTON.
Special attention given to orders from woolen mills for high grades and Peruvians.

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COTTON and LINTERS.
General Correspondence Solicited.
FAYETTEVILLE, N. C.
Fine fibre pearly 1 1-16 inch average staple engtli, fully good middling grade a specialty.

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NEW YORK.
H. BINDERNAGEL Alexandria, Egypt.

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THE S. BLAISDELL JR., CO.,
Egyptian COTTON Peruvian
American Long Staple a Specialty. and all American So uthern points.
Shipments direct to mill form Egypt, Peru
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passed by any corresponding period thus far this year. China was a heavy taker. The bettering of Eastern trade is one of the most hopeful indications. The Triple Alliance, having secured from Japan the concession necessary to loaning China money for payment of the war debt, silver is stronger, and with a little more improvement, Spanish-American rates of exchange can be so altered as to stimulate trade.

The total receipts of American cotton since September 1, 1894, show an increase of 1,960,129 bales, over the corresponding period of 1893-94. Figures covering to June 1st, show an increase in the world's visible supply of 347,912 bales, as compared with the same date in 1894, an increase of 263,750 bales over the corresponding date of 1893, and a decrease of 146,680 bales of 1892. Notwithstanding an increase in receipts at interior towns of over 1,800,000 bales, since September 1, 1894, compared with the corresponding time in '93-'94, interior stocks May 31, 1895, were 22 335 bales less than May 31, 1894.

August futures are now only a shade higher than bottom figures in 1892, when the crop was the largest on record. It should be borne in mind that the weekly European consumption of the American crop now averages 30,000 bales more than in 1892.

The Egyptian crop, as a whole, promises very well, an increase in acreage of nearly 10 per cent. being reported by the most conservative estimates.

Enlargements and Improvements.

—GEORGIA, Augusta. The Enterprise Mfg. Co. contemplate building an addition to double the capacity of the plant. Mr. J. P. Verdery, president of the company, can be adoressed.

—GEORGIA, Augusta. The John P. King Mfg. Co. contemplate enlarging their cotton mill

—*GEORGIA, Columbia. The Swift Mfg Co. inform us in regard to their reported enlargement, that they are building a small weave shed.

—GEORGIA, Columbus. The Hamburger Cotton Mills Co. have increased their capital stock to $100,000, and will build an addition which will double the capacity o their plant. 3000 new spindles will be placed.

—GEORGIA, Griffin. The Griffin Mfg. Co. are making preparations to erect a new building, which will be 368x100 feet in size. New machinery will be placed in the mill.

—*LOUISIANA, New Orleans. The Maginnis Cotton Mills inform us that their addition, previously reported, will consist of 612 spindles and 50 looms.

—MASSACHUSETTS, Adams. The Adams Bros. Mfg. Co. will make some extensive improvements to their warp mill. An additional story will be built to one part of the mill, and a building 50x90 will be erected in the rear of the plant, which will be used as a dye and dry house, engine room and store house.

—MASSACHUSETTS, Easthampton. The Easthampton Spinning Co. have placed orders for 400 additional looms, which will be installed in a few weeks.

—MASSACHUSETTS, New Bedford. The Rotch Spinning Co. has petitioned for leave to erect a wooden cotton shed, 72x304 feet, on the north side of their Mill No. 2.

—MASSACHUSETTS, Fall River. The Metacomet Mills are to make some extensive alterations to their plant. They will put in new carding and spinning machinery, and also a new Harris-Corlis engine of 1000 horse power.

—*MASSACHUSETTS, Fall River. Plans are being made for the addition, previously reported, to the Chace Mills. Wm. T. Henry is the architect. The building will be 120x410 feet, two stories high, and built of granite.

—MASSACHUSETTS, New Bedford. It is reported that the Pierce Mfg. Co. are contemplation the erection of another large addition to their plant.

—*MASSACHUSESTS, West Warren. The Warren Cotton Mills are having their mills remodelled. They will put in new engine and dyeing machinery, and it is expected will put in an electric light plant.

—NEW HAMPSHIRE, Nashua. The stockholders of the Jackson Co. have voted to double their capital stock, making it $1,200,000, and to investigate the matter of building a mill in the South.

—NORTH CAROLINA, Davidson. The Linden Mfg. Co. will put in 2500 new spindles.

—NORTH CAROLINA, Durham. An addition 460x75 feet, two stories high, will be built to the Erwin Cotton Mills. This addition will contain 625 looms.

—*NORTH CAROLINA, Franklinville. The Randolph Mfg. Co. will put 3500 spindles and 112 looms into their addition previously reported.

—NORTH CAROLINA, King's Mountain. The Enterprise Cotton Mills will build an additional mill to contain 2500 spindles.

—*NORTH CAROLINA, King's Mountain. The Crowder's Mountain Cotton Mills inform us that the addition, previously reported, to their plant, will be a spinning department. They will put in 2500 spindles and three sets of revolving flat cards. They are in the market for mill supplies, cotton machinery, cotton openers and lappers, carding and spinning machinery, bobbins, hangers, shafting and belting, also automatic sprinklers and watchman's clocks.

—NORTH CAROLINA, Monbo. The Long Island Cotton Mills will add 1000 spindles to their equipment.

—NORTH CAROLINA, Ramseur. The Columbia Mfg. Co. are putting in new looms, also a 300 h. p. steam plant.

—*RHODE ISLAND, Pawtucket. The Hope Webbing Co. inform us that the addition which we reported they were to build, will contain 100 new looms. They are in the market for cone winders, automatic sprinklers and elevators.

—RHODE ISLAND, Westerly. The Crefeld Mills will build a new weave shed, contract for which has been let to J. H. Bishop & Co., of Worcester, Mass. The new structure will be 90x270 feet, of brick, and will contain 420 looms.

—RHODE ISLAND, Woonsocket. The Ray Cotton Co. are putting in 20 new spinning frames.

—SOUTH CAROLINA, Columbia. The Columbia Mills Co., at a recent meeting of the stockholders, decided to put in 10,000 additional spindles.

—*SOUTH CAROLINA, Greenwood. The Greenwood Cotton Mills, who we previously reported were contemplating the erection of an addition, have now decided to put in 5000 spindles, thus doubling the capacity of the plant.

—SOUTH CAROLINA, Langley. It is reported that the Langley Mfg. Co. are about to replace their old cards with ninety new revolving flat cards, and to build an additional story to the plant.

—SOUTH CAROLINA, Piedmont. The Piedmont Mfg. Co. will put in 5000 additional spindles, and other machinery.

—NEW YORK, East Aurora. The addition which the Boynton & Waggoner Felt Co. are building to their plant, is nearly completed, and new machinery will be placed at once. This addition doubles the capacity of the mill.

—*NEW YORK, Newburgh. Messrs. Drew, Baldwin & Co., of Providence, R. I., have completed plans for doubling the size of the Hudson River Woolen Mill. A new 100 h.p. engine is being set up. Other machinery is being put in, also shafting and sprinkler systems.

—*NEW YORK, Schaghticoke. The Schaghticoke Woolen Co. inform us that their annex, recently reported, will be 50x80 feet in size, two stories high. They are also making general improvements through the mill.

—RHODE ISLAND, Ashaway. The Ashaway Woolen Co. are building a new weave shed and picker house.

—RHODE ISLAND, Providence. The Valley Worsted Mills will erect a new building, which will be 60x145 feet in size, three stories high. David Crenshaw will be the builder.

—RHODE ISLAND, Woonsocket. The Harris Woolen Co. have added four mules to their equipment.

—VERMONT, Springfield. W. H. H. Slack & Bros., shoddy manufacturers, have purchased the plant of the Springfield Toy Co., and are now clearing same preparatory to putting in their carding machines. The building will be used exclusively for carding.

PROVIDENCE DYE WORKS.

Dyers and Finishers,

. DIAMOND FAST BLACK .

FOR

COTTON YARNS, Suited for HOSIERY and WEAVING Cotton, Woolen and Worsted DRESS GOODS, Woolen and Worsted Mixed CASSIMERES and CLOAKINGS, also Woolen and Worsted Slubbing, COTTON YARN and WARP DYERS and BLEACHERS.

SAMPLE SKEIN FREE ON APPLICATION.

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R. GREENWOOD & BAULT,

GLOBE DYE AND BLEACH WORKS,

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Specialists in Cotton Warps and Skein Dyeing.

HOME BLEACH AND DYE WORKS,

PETER B. McMANUS, Proprietor.

Dyers and Bleachers of Cotton Yarns,

PAWTUCKET, R. I.

Pawtucket Dyeing & Bleaching Co., BLEACHERS AND DYERS OF

COTTON & COTTON YARNS, STOCKINET & JERSEY CLOTH.

OFFICE WITH **BLODGETT & ORSWELL CO., Manufacturers of Glazed Yarns,**

S. G. BLODGETT, Prest. **PAWTUCKET, R. I.** E. W. ORSWELL, Treas

Enlargements and Improvements.

—CONNECTICUT, Jewett City. The capital stock of the Aspinook Bleachery Co, has been increased, and the plant will be enlarged.

—MASSACHUSETTS, North Adams. The Windsor Co. will erect a new building 110x67 feet, two stories, of brick and iron, which will be used as a shearing and singeing room and storehouse.

—PENNSYLVANIA, Philadelphia. Messrs. Powell Bros., knit goods manufacturers, 28th and Parrish Sts, will erect a dye house, 33x137 feet, and will place orders immediately for dyeing machinery. Hales & Ballinger, 1200 Chestnut St., are the architects.

—MASSACHUSETTS, Springfield. The Hutchins Narrow fabric Co., of Worcester, have purchased a site near Wilbraham Ave., on which they will erect a building 233 feet long, and remove their machinery from Worcester. The work will probably be completed by the early fall.

—NEW JERSEY, Paterson. Messrs. Worthen & Aldrich, of the Manhattan Print Works Passaic, have purchased the site of the old Kingston Paper Mill, on which they will erect a large building to be used as a printing, dyeing and bleaching mill.

—*PENNSYLVANIA, Scranton. The foundations for the silk mill of Jas. Simpson & Co. have been completed, and work will be started on the superstructure at once.

—*PENNSYLVANIA, Taylor. A company has been organized, with Mr. P. Mulherin as president, and M. C. Judge as secretary, who have built a new mill at this place, and rented the same to Renard Fregerio & Co., doing business at Tobyhanna, Penn., who will operate it as a silk throwing or spinning mill.

—NOVA SCOTIA, Loch Lomond. William Chisholm has started a factory at this place for custom carding.

—The addition to the Pontiac (R. I.) Bleachery is completed, but no machinery has yet been placed in it.

—New drawing has been put in the Elizabeth Mills, Hills Grove, R. I.

—The Crompton (R. I.) Co. is improving the lower flooring of its mill and adorning the grounds about its property.

—A new engine has been put in the mill at Anthony, R. I.

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WILLIAMSTOWN, MASS.

BLEACHERS, DYERS AND FINISHERS

Of Pure Finish Shirtings, Sheetings, Canton Flannels and Filled Goods. Also Silesias, Satteens, Corset Jeans, Cambrics, Sleeve Linings, Pocketings, Flanneletts, and all descriptions of Dyed Goods.

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Being equipped with the French and other Foreign and Domestic Napping Machines, we are prepared to give any kind of Nap required, including the French FlannelFinish.

ESTABLISHED 1845.

T. BROPHY,
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Dyer of all Kinds of Yarn,

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FAST FANCY COLORS.

We make a specialty of dyeing **Mode** and **Tan** shade on hosiery and yarns, as also all other fancy shades. **Colors absolutely fast.** For particulars address

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KELLER & COOPER,

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Merrimack Wool Scouring Mill,

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WOOL AND NOILS

Scoured and Carbonized on Commission.

THEO. A. DUROSS, Wool Sorter and Scourer.

Having doubled my former capacity, I am now prepared to scour the largest lots in the quickest possible time. Especial attention given to western shippers. All wools covered by insurance while in my possession. I deliver wool free of charge in Philadelphia. Immediate returns made on sample tests. **All wools dried by cold air draft.** Best of References. Correspondence Solicited.

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Represented by S. MARTIN HENRY.

P. BLAISDELL & CO.,

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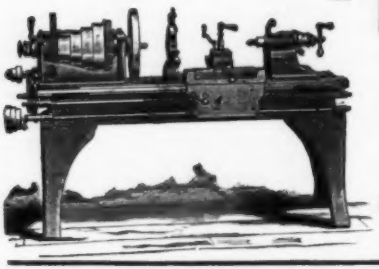

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Blaisdell's Patent Upright Drills,
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Boring Mills, Gear Cutters, and Hand Lathes

WORCESTER, MASS.

MODERATE PRICED

Gear Cutting Machine.

Especially adapted for use in Repair Shops. Now in use in nearly **ONE HUNDRED** representative mills, including **Twelve** in Fall River, Mass. On application, we shall be glad to submit full particulars, prices, and photographs of latest improvements. Send for our Sheet of References.

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19 Oak Street, New London, Conn.

THOMAS TOWNSEND,

Late of Hood & Townsend, Established 1885.

Manufacturer of **MACHINE WOOL COMBS,**

Hackles, Gills, Fallers and Porcupines. Tentering Pin Plates. Also Cotton Combs neatly re needled. Dealer in the Best English and American Cast Steel Pins and Comber Needles.

All Work Guaranteed. **MANCHESTER, CONN.**

RADEY, CUNNINGHAM & CO., MANUFACTURERS OF

Card Clothing of All Kinds.

INDEPENDENT of our **Competitors,** and **Dependent on our Customers.**

2137 DICKERSON STREET, KENSINGTON, PHILADELPHIA, PA.

Mr. Radey is a practical tanner, and Mr. Cunningham was a late member of James Smith & Co. before they sold out to the consolidation of the Card Clothing Co.

COVEL & OSBORN,

MANUFACTURERS OF

Mill Bandings OF ALL DESCRIPTIONS,

AND DEALERS IN ALL KINDS OF **Mill Supplies.**

COOK'S LOOM FORKS.

71 and 73 Pleasant Street, - Fall River.

MILL NEWS.

Cotton.

New Mills.

—ALABAMA, Montgomery. A commission has been issued to Jas. S. Pinckard and Wm. F. Joseph, under which they have opened subscription books to the capital stock for the People's Cotton Factory. A $200,000 capital stock is proposed for the new mill.

—*ALABAMA, Selma. The Selma Cotton Mills Co. has been organized with capital stock of $100,000. The directors are Ernest Lamar, S. D. Holt, W. C. Ward and others.

—*ALABAMA, Tuscaloosa. The J. Snow Hardware Co. inform us in regard to their new cotton mill, previously reported, that it will contain 2080 spindles for the manufacture of No. 14 single yarns. They will be ready to begin production about August 1st.

—DELAWARE, Dover. It is reported that the Dover hosiery factory will shortly be occupied as a cotton cheviot mill.

—*GEORGIA, Americus. It is further reported that Capt. W. M. Hitt is doing active work in raising money for the new cotton mill. About $20,000 has now been subscribed.

—GEORGIA, Athens. A stock company has been formed to erect a 10,000 spindle cotton mill at this place. James F. McGowan, president of the Commercial Club of Athens, is the prime mover.

—*GEORGIA, Augusta. The Sutherland Mfg. Co., recently incorporated, has purchased the plant and machinery of the Dartmouth Spinning Co., which they will operate with about $25,000 worth of new machinery to be purchased. W. T. Davidson, of Athens, Ga., is president of the company.

—*GEORGIA, Emerson. In regard to the cotton mill which we recently reported D. P. Morris & Co. would establish, we understand that the company will place machinery at once for the manufacture of cotton rope.

—GEORGIA, High Shoals. It is reported that the High Shoals Mfg. Co. have purchased the Price's mill property on the Appalachee River, and that they will erect a new cotton mill.

—GEORGIA, Washington. A cotton mill will be built at this place by R. A. Almand. The building will be 87x205 feet, to contain 3500 spindles and 100 looms.

—*MAINE, Lewiston. It is now reported that the Androscoggin Mills will erect a new building, which will be 500x100 feet in size, five stories high. It will be equipped with modern machinery for the manufacture of cotton fabrics.

—*MASSACHUSETTS, Fall River. Contract for the erection of the new mill of the Parker Mill has been let to Messrs. Beattie & Wilcox, of Fall River. The structure will be 150x400 feet, three stories high.

—*MASSACHUSETTS, Lowell. Messrs. Drew, Baldwin & Co., mill engineers, of Providence, R. I., are at work on the plans for the new 10,000 spindle cotton mill, which we have previously reported the Whittier Cotton Mills would build near Atlanta, Ga. The plant will consist of a main mill, about 340x117 feet, one story, boiler and engine houses, finishing and shipping rooms, operatives houses, etc. The firm will also reorganize their Lowell mill.

—*MASSACHUSETTS, New Bedford. The Whitman Mills Corporation have been organized with the following officers: F. R. Hadley, president; C. C. Diman, clerk, agent and treasurer. Plans for the building are being prepared by C. R. Makepeace, of Providence, R. I.

—MASSACHUSETTS, North Adams. Mr. W. B. Plunkett and others have purchased a tract of land at this place, on which, it is stated, they will erect a large cotton mill, costing about $600,000.

—NORTH CAROLINA, Charlotte. Mr. A. M. Price is at the head of a movement to erect a cotton mill at this place, which it is said will be built almost wholly of Philadelphia capital.

—*NORTH CAROLINA, Concord. The new cotton mill, previously reported to be built by J. M. Odell & Son, will be called the Buffalo Cotton Mills. A 3000 spindle mill will be built, and work has already been started on the buildings.

—NORTH CAROLINA, Graham. Plans are being prepared for an 8000 spindle cotton mill to be built at this place by L. Banks Holt.

—*NORTH CAROLINA, Elizabeth City. The cotton mill previously reported at this place, will probably be called the Elizabeth City Mfg. Co. They will build a mill 60x150 feet, to contain 8000 spindles.

—*NORTH CAROLINA, Franklinton. The Sterling Cotton Mills inform us that they will build a new mill, commencing on the foundation June 1st. They will put in 2080 spindles, to manufacture warps, and will put in looms in about a year. They are in the market for spinning machinery, belting, shafting, hangers and pulleys, skylights, iron roofing, heating and ventilating apparatus, electric lighting apparatus, fire hose, machinists tools and tanks.

—NORTH CAROLINA, New Stirling. Mr. Shaw Yount is reported to be interested in a movement to build a cotton factory near Catawba, which plant will be known as the Island Ford Cotton Mill.

—*PENNSYLVANIA, Chester. The Galey & Lord Mfg. Co., recently reported as incorporated, inform us that they will put in 250 new looms for the manufacture of fine wash fabrics. They are in the market for automatic sprinklers, elevators, electric lighting apparatus and dynamos.

—NORTH CAROLINA, Mt. Holly. It is reported that a new cotton mill to contain 25,000 spindles, will be built at this place.

—NORTH CAROLINA, Stice's Shoal. A new cotton mill, to cost $200,000, is to be built at this place. A. C. Miller, of the Belmont Mill, Shelby; Col. R. M. Oates, of Charlotte and others are interested in the enterprise.

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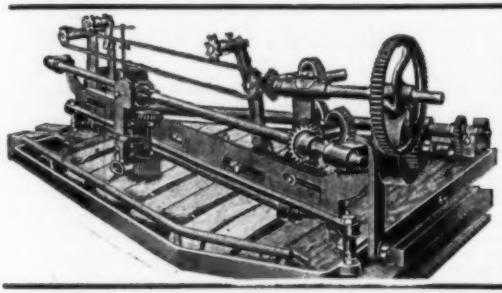

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ROLLER LEATHER,

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A Departure in Recording Personal Movements.

The TEXTILE WORLD, with this issue, takes up more earnestly than ever before, personal news. Textile papers have always done more or less along this line, but the items have been so thrown together in odd corners, without classification, and smothered by verbiage, that it was as easy to find a needle in a haymow.

It is our intention to put this matter in as nearly tabular form as possible, constantly adding to its completeness, until it shall serve as a guidebook of the movements of mill men throughout the country. It is to have its regular allotment of space, and will not be crowded in subject to the convenience of other departments.

Other personal information, grouped under such headings as "Resignations," "On Pleasure Bent," "Deaths," "Marriages," "Accidents," etc., will enable subscribers to read as they run. In short, it is our determination to dish up these doings without a superfluous word, which will for the first time make it possible to print every atom of such news, Peter no longer being robbed to pay Paul. We are sure our friends will co-operate toward this end, even more heartily than they have in the past, and that is saying a great deal.

Changes Among Mill Men.

In order to give all the news in this line, it is brought down to the mere facts; the name of the man is given first, the position he is holding and the mill he is now employed in, follow next, while the place where he was previously engaged is given last, if the information is at hand.

FOR EXAMPLE: John Jones, supt., Jonesville Mills, Lowell, Mass; Smith Mills, Fall River. Filled out would read, John Jones is now superintendent of the Jonesville Mills, at Lowell, Mass. He was formerly with the Smith Mills, at Fall River, Mass.

John Fisher, boss spinner, Cheshire Mills, Harrisville, N. H.; Hampden, Mass.

James Reeves, overseer carding, Globe Cotton Mill, Rock Hill, S. C.; Clover, S. C.

John Enloe, supt., Capital Batting Mill, Columbia, S. C.; Red Bank Mill, Lexington, Ky.

J. Lynch, carder, Pembroke Mill, Suncook, N. H.; Amesbury, Mass.

John Day, boss carder, Warren Woolen Mills, Stafford Spgs., Ct.; Glen Falls Worsted Co.

I. W. Wright, supt., American Mills, Greenville, S. C.; Spartan Mills, Spartanburg, S. C.

J. H. Keely, supt. weaving, Queen City Cotton Co., Burlington, Vt.; Geo. Draper, Hopedale.

N. W. Lees, boss weaver, Manchaug, R. I.; Montreal.

B. L. Horliss, overseer spin., Argonaut C. Mill Co., Covington, Ky.; Rome C. Mill, Rome Ga.

(Continued on page 127.)

Established 1844.

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(WM. J. BUCKLEY)

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Manufacturer of all kinds of

SPINDLES, FLYERS, RINGS, TUBES, CAPS, &C.

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MACHINERY.

Roving Spindles and Flyers a Specialty.
Light Forgings. Repairing of all kinds.

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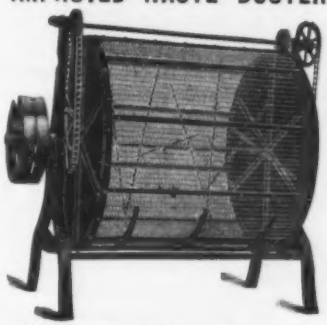

For Cleaning Wool Waste. Superior to any now in use. Manufactured by the Stillman-Rich Machine Co., Westerly, R. I. Send for circular.

If you want the Best, Order our Patent Metallic Burnished Rings.

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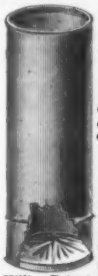

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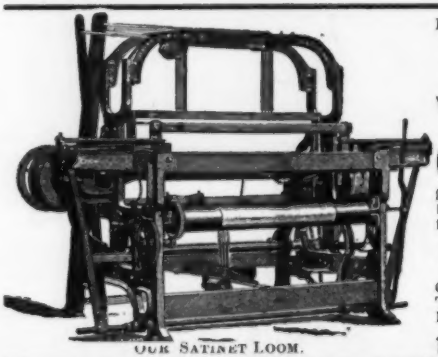

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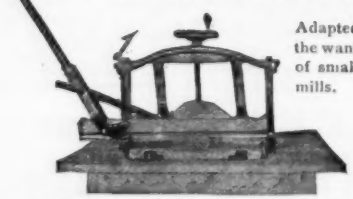

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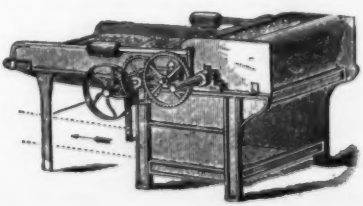

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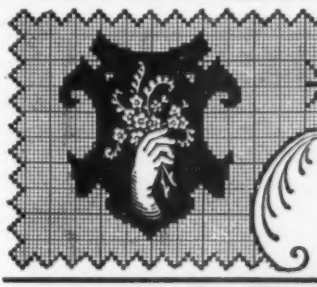

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Given HIGHEST AWARD at Columbian Exposition.

This clock is adapted to six or twelve stations and the keys are all different. The registering is done by numbers ranging from 1 to 6 and 1 to 12, instead of as in the old style Time Detectors, which mark either by holes or an impression on the dial, being the same for all stations. A liberal allowance made for old Detectors. For circulars, prices and further information address

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(Continued from page 123.)

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J. W. Pritchard, overseer quillers, Chester (S. C.) Mills; Rock Hill, S. C.

W. L. Witham, supt., Semmes Parker Mfg. Co, New Orleans; Dartmouth Factory, Augusta, Ga.

Albert Beaumont, overseer finishing, Saxony Mills, Little Falls; Fuld & Hatch, Albany.

Richard Littlewood, assistant dyer, Slater Mill, So. Webster, Mass.; Olneyville, R. I.

Thos. Hupy, overseer card and comb, Warren Woolen Mill, Stafford Spgs, Ct; Lawrence.

Isaac K. Stead, overseer card and spin., W. J. Dickey & Son, Balto.; Wm. Watt & Son, Norristown, Pa.

D. Willingmyre, overseer, Herbert & Jones, Phila.; E. T. Steele & Co., Bristol, Pa.

A. F. Carmichael, boss carder, Sutton's Mills, North Andover; Pondicherey Mills, Bridgeton, Me.

J. McDonnell, boss dyer, Staffordsville, Ct.

G. F. Morris, loom fixer, Fletcher's Mills, Providence.

Thos. Hines, boss carder, Manhattan Worsted Mills, New York City.

Oscar L. Suenderlauf, supt., Central Woolen Co., Stafford Spgs., Ct.

W. H. Ranken, (return) boss dyer, Manchester (N. H.) Mills.

C. M. Holmes, boss carder, New Bedford.

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R. Whitehouse, boss weaver, Peacedale, R. I.

James Moffit, overseer weaving, No. 4 Mill, No. Grosvenordale, Ct.

John Gilligan, supt., Chester (S. C.) C. Mill.

J. C Franklin, overseer spin., Converse Mill, Glendale, S. C.

John Allison, overseer carding, Atlantic Mill, Millbury, Mass.

Oscar Greenhalgh, dresser tender, McGuire & Gillmore, Woonsocket.

Chas. F. Sloane, foreman, S. K. Wilson W. Mill, Trenton, N. J.

Edward Gledhill, supt., Lakeside Worsted Mill, Madison, Me.

Chas. B. Skipper, supt., Atherton C. Mills, Charlotte, N. C.

Geo. A. Maguire, overseer spin., Perryville Mills.

Robt. Harrington, overseer, Dalton (Mass.) Woolen Mill.

Wm. Brierly, overseer spin., Linwood Mills, No. Adams, Mass.

Eben Blake, supt. weaving, Farwell Mills, Lisbon, Me.

E. Tator, supt., McLaughlin K. Mill, Cohoes, N. Y.

Sam'l Cames, boss spin., Glennon Woolen Mill, Dalton.

David C Wyatt, overseer spin., Elm Mill, Lowell.

Michael Mullaney, boss spin., Mt. Pleasant Mills, New Bedford.

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W. A. S. Hampshire, boss dyer, Slater South Village Mill, Webster, Mass.

(Continued on page 129.)

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Wm. J. Woodward, supt., Batesburg (S. C.) Cotton Mill.

Henry O'Donnell, supt., Dodge Mfg. Co., Boston; Franklin (Mass.) Knit Co.

W. R. Ballard, overseer card and spin., Batesburg (S. C.) Mill; Griffin, Ga.

Mr. Buffington, supt., Richland Cotton Mills, Columbia, S. C.; Clifton, S. C.

W. S. Norris, overseer spin., Rome, Ga.; Trion Factory, Ga.

R. S. Holliday, loom fixer, Spartan Mills, Spartanburg, S. C ; Piedmont, S. C.

George Mallison, boss dyer, Oak Valley (R.I.) Mill; Pascoag, R. I.

Ernest Lord, designer, Blackstone (Mass.) Worsted Mill; Lonsdale (R. I.) Co.

Percy Musgave, boss dyer, Robinson Woolen Mill, So. Windham, Me.; Oak Valley R. I.

George Hayman, overseer finishing, Robinson Woolen Mill, So. Windham, Me.; Niantic Wool Co., E. Lyme, Ct.

John B. Roy, overseer spin., W. A. Slater, Jewett City, Ct.; No. Adams, Mass.

Joseph A. Maguire, overseer spin., Ellerton, Pa.; Perryville Mills.

George Maguire, overseer spin., E. Jenckes, Pawtucket; Yarmouth, N. S.

J. A. Summey, carder, Spartan Mills, Spartanburg, S. C.; Greenwood, S. C.

Thos. Moore, boss carder, Milfort C. Mill, Ft. Mill, S. C.; Rock Hill, S. C.

Edward C. Beach, supt., Catawba Spin. Mill, Chester, S. C.; Patterson Mfg. Co., Concord, N. C.

J. B. Streaker, overseer card and spin., Ft. Mill (S. C.) C. Mill; Pocahontas C. Mill, Petersburg, Va.

Wm. D. Wyman, overseer spin., Millbury (Mass.) C. Mill; Manchester N. H.

H. G. Mosey, overseer carding, Jas. Knowles, New Castle, Del.; Clifton Heights, Pa.

Joseph Gallagher, boss carder, Ellsley Mills, Phila.; Wm. Wood & Co., Phila.

F. D. Toop, overseer ring spin., Atlantic Mills, Providence; Peabody Mills, Newburyport.

Resignations.

William Magregor, foreman, S. K. Wilson's Woolen Mill, Trenton, N. J

A. M. Price, superintendent, Atherton Cotton Mills, Charlotte.

Joseph Young, overseer spinning, Millbury (Mass.) Cotton Mill.

Alson Lothrop, superintendent weaving, Farwell Mills, Lisbon, Me.

P. T Moore, superintendent, McLaughlin Knitting Mill, Cohoes, N. Y.

J. W. Woodcock, dyer, South Webster, Mass.

John Hunt, second hand, carding room, Quidnick (R. I.) Mill.

Arthur N. Hersom, superintendent weaving, Queen City Cotton Co., Burlington, Vt.

(*Continued on page 131.*)

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The rapidly increasing area which is being devoted there to the cultivation of cotton and raising of wool under the most favorable conditions, the excellent native labor, moderate cost of land and fuel, large domestic consumption of all cotton and woolen fabrics, and the high price of imported goods, warrants the promise of immediate and remunerative returns on capital invested in this class of mills in that region.

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A Three Set Knitting Mill, in the centre of the knit goods trade of New York; best of shipping facilities, skilled help, 48 inch cards and all corresponding machinery in good condition. Can be bought on easy terms; good reason for selling; ample room to enlarge. Will be sold with or without machinery. Correspondence held in strict confidence if desired. Address, HENRY HUDSON, 523 Union St., Hudson, N. Y.

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For Sale. 6 narrow fabric looms, special build, weaving 1 inch to 5 inch with cop or quill shuttles, but little used. M. S., care Textile World.

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One 36 inch Davis & Furber Picker, with Bramwell feeder, nearly new.

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Four Davis & Furber, Up and Down Gigs.

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FOR SALE VIRGINIA WOOLEN MILL.

Situated in a large wool raising section. New modern brick building and machinery. Cheap Wool, Coal, Labor, Low Taxes and Freight Rates; good water. Cost $10 000; can be bought for $10,000.

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To locate in the city of Elmira, N. Y. A desirable building available for manufacturing purposes. Only a block from electric car line and eight blocks from center of city. A good location for obtaining help. The building is 38x71 feet and is 3 stories high. City Water and gas or electric light supply. Fire proof boiler house separate from main building. Fire hose on every floor and well built for heavy or light machinery. Cement floor and drying room in basement. This building has been very little used. The owners will rent or will contribute same for an interest in the business. Address P. 132, TEXTILE WORLD.

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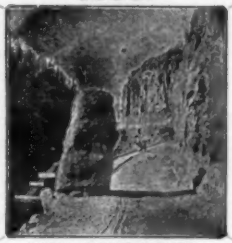
This little brochure contains more than 100 pages, and is illustrated with half-tone engravings in a variety of colors. It is fit to grace any parlor table.



IN YELLOWSTONE PARK.

We will send this pamphlet to any address upon receipt of SIX CENTS in postage stamps.

The text and illustrations are entirely new, and if you wish to learn about the Northwest and the YELLOWSTONE PARK, send to the address below for the book.

ALASKA,
RED RIVER VALLEY,
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CHAS. S. FEE, General Passenger Agt.,
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FARGO,
HELENA,
BUTTE,
MISSOULA,
SPOKANE,
VICTORIA.

(*See page 123.*)

John Stapleton and James Hanly, respectively boss carder and spinner, Ashland (N H.) Knitting Co.

Joseph Seaton, boss dyer, Merchant Woolen Mill, Dedham.

Francis Carroll, overseer spinning, Elm Mill, Lowell.

James P. Carpenter, Woonsocket, R. I., overseer weaving, Hamlet Mill.

John O'Brien, loom fixer, Glendale, R I.

Patrick Cuff, boss dyer, Oak Valley Woolen Mill, Burrillville R. I.

Joseph Blomley, overseer carding, Milltown, N. B.

E. N. Fuller, second hand, Manchaug, R. I.

C. Leary, 30 years dyer, E. E. Hilliard Co., Buckland, Ct. Gold watch given him by firm.

M. Coutre, carder, Russell Mfg. Co.

Miss Emma Wainwright, clerk warp spooling room, Washington Mills, Lawrence. Watch chain and charm given her by associates.

W. H. Ashworth, superintendent, Exeter, (N. H.) Mfg. Co. Sideboard, etc., given him by associates.

J. C. Fielden, boss weaver, Manchaug, R. I.

Promotions.

S. G. Smith, overseer spinning, Converse Co., Glendale, S. C.; assistant superintendent.

J. R. Thompson, overseer cloth room, Pearl Mills, Durham, N. C.

S. A. Clark, superintendent, Kirk Mills, Central Village, Ct.

Marriages.

J. Burt Hutchins, forman, Miss Lizzie McClelland, forewoman, Newland & Neilson Knitting Mill, Mechanicsville, N. Y.

Frank C. Turner, of Norwich, Ct., and Miss Fannie Esther Hall, Poquonock, Ct.

A. S. Byers, of Sagehomme & Byers, North Andover, Mass., and Miss Avis Standing, Lawrence, May 23.

On Pleasure Bent.

Harold Lawton, superintendent Centreville, R. I. Cotton Mill, Europe, two months.

E. H. Rathburn, Ray Woolen Co., Franklin, Mass., Europe; return in July.

Byron F. Card, agent Howland Mills, New Bedford, extended European trip.

John Parkhill, Parkhill Mfg. Co., Fitchburg, and Mrs. Parkhill, Europe; back in August.

J. B. Mayo, Foxcroft, Me., and Mrs. Mayo, extended western trip.

J. M. Tenney, hat manufacturer, Methuen, Mass., and C. H. Tenney, New York, Europe.

Richard Barlow, agent Pacific Print Works, Lawrence, Europe.

(*Continued on page 132.*)

CORRESPONDENCE SOLICITED.

Parties having Cotton Machinery of capacity, say from 2 to 10,000 spindles, with requisite looms and desiring to move south into a section suitably located for cotton manufacturing enterprises, will do well to correspond with the undersigned who have a small but well equipped cotton mill, which they wish to enlarge. This mill is beautifully located on 30 acres of land adjoining the town. Correspondence solicited. Address, C. L. STADTLER, President Excelsior Manufacturing Company, CUERO, De Witt Co., TEXAS.

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Water unexcelled for Wool Washing.
Power furnished at very low price.
Good Locations along Railroad.
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TEXTILE BOOKS HALF PRICE.

The following new textile books will be sold at half original cost:

Woolen Superintendent's Guide by Green. Cost $5.00; will sell for $2.50. Also a copy of Baldwin's Self Instructor in Designing, cost $10.00; will sell for $5.00. Fuller's Tables, cost 75 cents, will sell for 40 cents.

Every book entirely new, taken in trade. JOHN WILLIAMS, Box 101, South End, Boston

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J. R. WATSON,
Gen'l Pass. Agent.

Obituary.

MANUFACTURERS AND INVENTORS.

George H. Quincy, 63, of Boston; retired merchant; one of the founders of firm of Harwood & Quincy, manufacturers of woolen machinery.

Everett W. Bigelow, apoplexy; formerly agent and manager Clarendon Mills, West Boylston, and later engaged in manufacturing at Clinton, with the late Andrew L. Fuller.

Thomas A. Lefavour, 68, of Beverly, Mass., for many years purchasing agent of Boott Cotton Mills.

Elisha Wilder, 57, of Cambridge; inventor of knitting, woolen and other machinery.

H. I. Kimball, builder and founder of the Atlanta Cotton Mills.

Albert W. Ball, 74, of Amherst, for 20 years a manufacturer of cotton goods.

Emra A. Potter, 79, for more than 50 years a bobbin manufacturer in South Scituate

Henry L. Kellogg, 79, of Newington, Ct.; long a satinet manufacturer.

S. M. Richmond, 76, of Dolgeville, N. Y.; long part owner of the Saxony Knitting Co.

James M. Hadley, 78, of Kansas City, formerly woolen goods manufacturer at Rumney, N. H.

Charles A. Wheelock, 82, of Uxbridge, for 50 years of the firm of C. A. & S. M. Wheelock, manufacturers of hosiery yarn, satinets and cassimeres.

Deaths.

George Haslehurst, 71, slasher tender, Woonsocket.

Dan'l Tenny, 40, scalded dye vat, Hallville Cotton Mill, Norwich, Ct.

Robert M. Fleming, Troy, N. Y., formerly overseer Perry and Washington Mills, Lawrence.

Mrs. Alice Kilty, 31, wife of L. F. Kilty, agent Thayer Woolen Mill, North Oxford, and Dayville, Ct., Mill. Mills closed May 22

—The M. A. Furbush & Son Machine Co., Philadelphia, builders of woolen machinery, has just brought out a new patented warp reel, called the "Universal," having no pins or holes on the slats. They are filling many orders for them.

—One of the finest woolen mills in the country is the Waverly, at Pittsfield, Me. It has six sets of cards, its machinery being of the very latest pattern.

—The Pettee Machine Works, Newton Upper Falls, Mass., has received the order from the F. W. Poe Mfg. Co., Greenville, S. C., for revolving flat cards.

—The Westbrook (Me.) Mfg. Co is putting 70 Stafford dobbies on its looms, and is also putting in more hydrants These mills are running full time on colored cotton goods.

—The Queen City Cotton Mills, Burlington, Vt., are running 300 of the already famous Northrop looms, and find they fully reach, if they do not surpass expectations. One weaver can run 16 of these looms, and have no looms stopped, at that. J. H. Hines is the agent, and A. N. Hersom, formerly with the Wamsutta Mills, New Bedford, superintendent of weaving.

TRIENNIAL
MECHANICS' FAIR.

Boston, Oct. and Nov., 1895.

APPLICATIONS for space by Inventors, Mechanics and Manufacturers are now being received. Floor plans ready, and Groups provisionally located. This Exposition will be attended by half a million people.

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Office, Huntington Avenue, Boston.

"LOOK HERE, YOUNG MAN."

Do you want to learn practically how to manufacture woolen, worsted and cotton goods? If so commence at once, as I can take a few more scholars in this line. Full instructions given in Designing, Calculations and Estimations on stock, etc. Terms reasonable. Address, INSTRUCTOR, Box 719, Middleboro, Mass.

FREE!

Our 24-page catalogue of Organs, also our new and elegant catalogue of Pianos, containing 16 pp. We have the largest manufactory in the world, from which we sell direct to the consumer at wholesale prices, thus saving the profits of the dealer and the commissions of the agents. We furnish a first-class Organ, warranted 20 years, with stool and book, for only $27.50

No money required until instrument has been thoroughly tested in your own house. Sold on instalments. Easy payment.

We positively *guarantee* every Organ and Piano 20 *years*. Send for catalogue at once if you want to obtain the greatest bargain on earth. Write *name and address plainly*, and we will send by mail same day letter is received. As an advertisement, we will sell the first Piano of our make in a place for only $175. Stool, book and cover free. Regular price, $350.

BEETHOVEN PIANO & ORGAN CO., P. O. Box 1303 WASHINGTON, N. J.

MEN WANTED.

Wanted. **Thoroughly Competent** knitter, to take charge of new plant, Scott & Williams Machine. Must have thorough experience, and know how to handle room. Permanent job, and good pay. Excellent chance. Apply to Novelty Co., Textile World office.

Wanted. First class knitters to join an overseers bureau. Also want good capable second hands of both cotton and woolen carding. Machinists and loom fixers are also wanted.

SITUATIONS WANTED.

The advertisers in the following columns should be addressed in care of Textile Mfg. World, or inquiries concerning them may be addressed directly to "Information Department, Textile Mfg. World," as full particulars of each advertiser are on file, and the addresses of suitable agents, superintendents and foremen for every branch of the textile industry will be furnished to manufacturers.

Wanted. A young single man, desires position either in laboratory or dyehouse. Is a graduate of a special course in chemistry from Philadelphia Textile School. Address J. T., care TEXTILE WORLD.

WOOLEN SUPERINTENDENTS.

654 **Woolen Superintendent.** 33 years of age, has worked in some of the best mills in N. E. Is a practical weaver and designer; thoroughly understands the making of cassimeres, cloakings, dress goods, etc. Has excellent references. Prefer N. E., N. Y. and Penn.

856 **Superintendent and Manager.** Experienced on blankets, flannels dress goods, wool and worsted. Has had thirty years' experience. Can give best of references. Unmarried. Salary and part interest can be arranged with proper parties. Has a knowledge of trade, having sold goods direct for the mill.

881 **A thorough practical manufacturer** and designer wants superintendency or designing position. Served his apprenticeship in English mills. Young, but widely experienced. Has worked on worsteds, scotch cheviots, uniform goods, overcoatings, cassimeres, chinchillas, dress goods and cloakings. Can furnish excellent references; 28 years of age.

942 **Is Expert on Woolens, Worsteds** and dress goods. Desires a position as superintendent, or assistant superintendent and designer, or designer alone. Has worked in best New England mills. Salary $2000 per annum.

1023 **A Good Woolen Mill Superintendent.** Experienced on fancy cassimeres, worsteds, fancy and piece dye, cheviots, overcoatings, kerseys, beavers, cloakings, friezes, etc. Salary, moderate, Age, 38 years. Married.

880 **Superintendent or Designer** in large mill. Has had large experience in the designing and manufacture of nearly all kinds of goods made in a woolen mill. Has been superintendent and designer for the past 25 years. Has the best of references. Is 49 years of age and married. Has worked on suitings, coatings, cloakings and overcoatings in worsted and wool, fancy cassimeres, wool and piece dyed cheviots, shawls, flannels, blankets, beavers, skirts, etc. Will go anywhere excepting Canada.

COTTON SUPERINTENDENTS.

934 **Ginghams, cotton dress goods,** shirtings, cotton and woolen, both fine and coarse, also cheviots. High up in his knowledge of these goods. Experience gained in Scotch mills. Is a practical dyer and finisher, and a practical designer. Desires a position as agent or superintendent, or as superintendent and designer. Age 42; married.

996 **Cotton Mill Superintendent,** has had sixteen years' experience on all classes of yarns, print cloth and sheetings. Has held responsible positions, and gives first-class references as to ability and character. Age 45, single.

1016 **Very desireable man,** wishes a superintendency. Strong point weaving, spooling, warping and dressing, but has also done good work in designing. Shirtings, sheetings, ginghams, ducks, demins, etc., etc. Is 35 and married.

1056 **Cotton Superintendent.** Experienced on fine and coarse yarns, rope, twine, mops, etc. Age 29, unmarried. Good references. Salary $30 per week.

WOOLEN CARDERS.

178 **Is the man** conservative mills are looking for; 38 with a family, desires pleasant town to settle down in. Excellent carder on wool or cotton and shoddy mixed dress goods.

787 **Capable man.** Carder. 42 years old, married. Good experience and well recommended. Has worked on beavers, cassimeres, dress goods, all kinds of mixes and hosiery.

826 **Has worked in best New England** mills; as second hand, and capable of taking an overseership in medium or small mill. Age 31.

1030 **Woolen Carder.** A first class man with good references and wide experience desires position as overseer of woolen carding. Has worked on from fine wool to low shoddy. Age 27. Married and can take position at once. A trial will show that he is the right man.

1051 **Has had 27 years' experience** in woolen mills. Has carded satinets, hosiery, flannels, cassimeres, shoddy and all sorts of stock and goods. Excellent references. Age 45, married. Salary not less than $3 per day.

829 **Has carded all kinds of stock** and worsted in some of the very best rooms in New England as second hand, wants overseers position in a small room, and can fill it. Salary moderate. Age 30; married.

912 **Superintendent or boss carder,** good references. His forte flannels, dress goods satinetts, union cassimeres. 41, family. Salary moderate.

COTTON CARDERS.

802 Has been overseer of carding for the past 12 years in some of the biggest cotton mills in ew England. Will take superintendency of small mill. Has good references. Has experience on most every thing in cotton; Prints.cotton flannels and satines. Age 29 years; Married. Prefers N. E. states.

824 **Good man for overseer** in medium or small mill, or for second hand in any large mill; good at figuring; good references.

1001 **Has Carded** for ginghams, sheetings, checks, prints, etc., and is first class. Age 34, married. Wages $2.50 and up.

1072 **Cotton Carder.** Experienced on mixed and colored hosiery and fine yarns, and print cloths Has worked wholly in New England, but will take position anywhere.

FINISHERS.

193 **Woolen Finisher of first rank,** all classes of woolens from loom to case. Age 44; married.

734 **Woolen and worsted superintendent** and boss finisher. Has worked on broadcloth, flannels, carriage cloths, worsted coatings, dress goods, linings and cotton warps. Has had 20 years experience on mixes in mungo, shoddy, noils and cotton.

1007 **Dress goods and fine meltons** prefered, but has worked on all kinds woolens. N. Y. or N. E. states. Age 22. salary moderate

1041 **Woolen Finisher.** Has had experience on fancy and piece dyed goods, cassmeretes, cheviots, worsteds, kerseys and dress goods. Wants position as overseer or second hand in New England States. Age 26 years. Will work for $2 50 per day.

WOOLEN SPINNERS.

633 **Has worked Davis & Furber,** Johnson & Bassett and Woonsocket mules. Has experience on ladies' dress goods, overcoatings and a variety of goods. Is 35 years of age and married. Salary $2.50 per day.

941 **A Very Efficient Man.** Used to most every class of woolen goods; age 28, married. Salary moderate.

932 **Carder and spinner** in 3 to 5 set mill. Has worked on fine dress goods and cassimere stock. Age 29; married. Wages $3.00, or so

1017 **Boss spinner** on stock for cassimeres, beavers, cheviots, flannels and woolen shirting. Age 29, married. Wages $2 50.

1021 **Worsted overseer** of spinning and drawing, or superintendent. Mohair and long and short wools.

1065 Has worked 23 years in the spinning room. Thoroughly understands doubling and twisting. Has had experience on meltons, cheviots, hairlines, fine overcoatings, fancy cassimeres and shoddy. Has excellent recommendations. 37 years of age; married. Salary $2.50 per day.

COTTON SPINNERS.

1036 **Learnt his trade as spinner in** one of the best mills in Mass. Has worked fine and coarse, colored and white goods; 14 years experience. Is 38 years of age, married Good references. Will work for $3.50 per day at the lowest.

1058 **A Cotton Spinner of the First Rank.** Understands thoroughly twisting, drafting, and spinning the different classes of cotton. A good mechanic and an expert on copping. Has worked on flannels, prints, fine cotton underwear and sale yarns. Age 40, married. Salary $3 to $4 per day. Will go anywhere in the United States.

1061 **Experienced on anything in** the cotton line, as overseer of spooling, warping and slashing. Has the best of references as to ability and character. Is an A1 man, and can make his department pay. Age 47 years, married. Will work for $3.00 to start with.

1063 Overseer of ring spinning. Is a good man, and has the best of references. Age 27 years, married. Experienced on ginghams, sheetings, etc. Salary $3.00 and up.

1068 **Cotton Ring Spinner.** Understands spooling, warping and twisting. Has worked on yarns from 4s to 70s. Age 30 years. Will take good second hand job. Salary from $2.00 to $3.00 per day.

WOOLEN WEAVERS.

873 **Woolen or Cotton Weaver, or** loom fixer. 38 years of age, married. Has worked on ladies' dress goods, blankets, flannels, cheviots, meltons, satinets and cotton sheetings. Will go anywhere in the United States.

997 **Cotton and Woolen Weaver.** Has worked on plain and fancy dress goods, cassimeres and worsteds; wages $2 50 and more per day. Age 45, married. Furnishes excellent references.

1004 **Now in the West,** good weaver. Experienced also in the best Eastern mills. Has worked on cassimeres, meltons, cheviots, beavers, cloakings, worsteds. Is 38 and married.

1020 **Woolen weaver, first class man.** Experienced on cassimeres, dress goods, shawls, flannels, etc. Good references.

614 **Boss weaver and designer** has had a wide experience on cassimeres, dress goods, worsteds, casket cloths, beavers, flannels, blankets, doeskins, satinets and jeans. 45 and married. Salary $3 or so.

COTTON WEAVERS.

176 **South preferred.** Understands fixing a loom, and not afraid to do it. Gets on well with Southern help.

539 **Excellent manager** of help. Splendid record of production. Plain and colored work. Twills, ginghams. Age 35, married.

837 **Sheetings, twills, satteens,** fancy goods, and leno. Age 31, married.

938 **Experienced on Checks,** duck, sheeting, drilling, cottonades, awnings.

1037 **Has 19 years experience** in cotton weaving. Can work all kinds of greys. Has good references, and is an excellent workman. Will go anywhere in the U. S. Is 35 years old and married. Salary depends on size of position.

1043 **Desires job in a good** Southern mill as overseer of weaving or superintendent. Has had experience on plain and fancy goods of all kinds. Will take a position anywhere in the United States or Canada. 47 years of age, married. Will work for $3 00 and upwards.

1052 **A1 Cotton Weaver.** Has worked for 12 years as overseer of weaving in one of the largest cotton mills in New England Age 39, married. The best of references. Will work for $3 per day to start.

1073 **Cotton Weaver.** Ginghams, fancy dress goods, shirtings, sheetings, leno and silk jacquard work; 35 years of age. Will take position anywhere in United States.

DYERS.

To Hosiery or Woolen Manufacturers.

A position wanted by a young married man as DYER with some good firm. Have had 10 years' experience on loose stock, piece yarns and understand the handling of hosiery from machine to case. Would take the dyeing in a large mill, or in a hosiery mill would take the dyeing, boarding, finishing, seaming, etc. Have been for some time with one of the largest dye works in this country, and so understand all classes of goods. Can give the best of references from former employer Will go anywhere at a reasonable price. Would be pleased to hear from manufacturers. Address, E. G. I., care TEXTILE WORLD.

874 **An Excellent Dyer.** Comes from a family of dyers. Besides being a practical dyer, he thoroughly understands fulling, and wet and dry finishing of low stock. He has worked on cotton warp goods, indigo blues, carriage cloths, fancy cassimeres, yarns, dress goods and piece dyes. Has the best of references as to ability and character. 28 years of age; married. Can take a position at once.

875 **Overseer of Dyeing, or Second** hand. 30 years of age. Has had experience on all-wool cassimeres, heavy woolen cloakings, raw wool, shoddy, and worsted yarns. Prefers New England and Middle States.

1026 **Overseer of Dyeing.** A first class dyer, 40 years of age, and married. Has worked on woolen and worsted piece goods, slubbing, worsted and mohair yarns. Will work for $4 per day and upwards. Can give best of references, and can take position at once.

1031 **Dyer,** who has worked on raw stock, wool and shoddy and woolen yarns of all grades from fine worsteds down to low carpet yarns, piece goods, heavy woolens, desires position. Age 40, married. Has worked with one mill eight years and can give good references.

1057 **A Good Dyer.** Is experienced on cotton and woolen hosiery, elder downs, cashmerettes, dress goods, linings, piece warps, skein, fancy and raw stock. Age 25 years, married. Salary between $3 and $4 per day.

KNITTERS.

1024 **Overseer of Knitting.** Is at present employed, but desires to change. Has had over six years' experience on wool and cotton, heavy and light. Will accept any reasonable salary.

1025 **Superintendent or Overseer of** Knitting. Has been boss knitter with one mill ever since it started, 12 years ago. Has had long experience, and can give good references. Married. 46 years of age.

1028 **Overseer of Knitting.** Has worked on cotton underwear and hose, and held position as second hand for over seven years. He is 27 years old and married. Is willing to start at $3 per day, with prospects of more.

1054 **Boss Knitter.** Has worked on hosiery in wool and cotton. 40 years old, married. Good references. Will work for $75 or $80 per month. Will also take a position as machinist.

1066 **Knitter.** Experience on cotton, woolen and worsted goods. 24 years of age. Will take position anywhere in United States. Salary $3 to $4 per day.

KNITTING FINISHERS.

592 **Knit Goods Finisher.** Is desirous of obtaining a position as superintendent or overseer of finishing and seaming rooms, in a mill making knit goods on circular machines. Has had a long experience in manufacturing, and understands the business in all its branches. Age 42 years, married.

928 **Foreman dyer and finisher** of knit goods. Very extended experience on all kinds of cotton, wool, and mixed goods, in hosiery, underwear, and overshirts.

1044 Overseer of Boarding and Finishing Hosiery. Experienced on cotton, woolen and mixed, seamless and fashioned goods. Will work for two dollars per day. Age 41 years, married. Good references. Will go anywhere in the United States, excepting the West.

MISCELLANEOUS.

998 **First-Class Sewing Machine Fixer** and Finisher in knitting mill. Has worked on all kinds of shirts and drawers. Furnishes best of references. 45 years old, married. Wages $2.50 to $3.50 per day.

1038 **Master Machinist or Foreman.** Will give 30 days trial for expenses. Has experience on light and heavy goods repairs. Age 31 years, married. Salary $3.50 per day.

533 **Situation wanted** as superintendent in flax, hemp or jute mill. Can make all kinds of yarn, threads, sail twines. Best of references as to character and ability. Twenty years experience in the same line, both wet and dry spinning.

840 **Beaming or Charge of Beaming.** Has worked on ginghams, tickings, shirtings and dress goods. Age 29; married; salary as beamer $2.50; in charge $2.75.

927 **Boss Dresser Tender.** Five years overseer on stock for cassimere, flannels, worsteds, kerseys, beavers, dress goods and all other kinds of woolens.

1008 **Wants boss job in flannel mill.** Northern New England preferred, also a good man for dresser or fixer, has worked on flannels, serges, cheviots, fancy dress goods. Is 34, married.

914 **Mechanical engineer and cotton** mill superintendent, English, of high character and ability, wants a position in the South as superintendent, or would undertake the erection and starting up of cotton mills.

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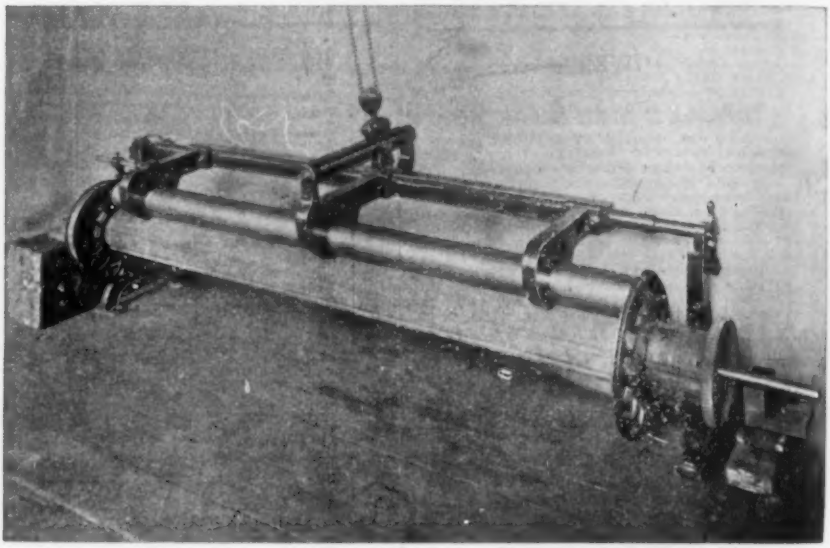
WARP COMPRESSOR.

For Compressing Warps on Beams.

This new machine is the invention of a thoroughly practical manufacturer and actual experience in several prominent mills has proved the truth of the claims made for it.



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30 to 50 per cent. gain in the amount of yarn that can be put on the beam.
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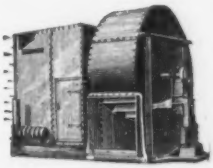

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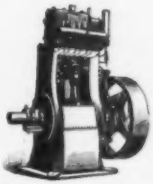

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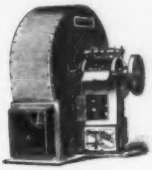

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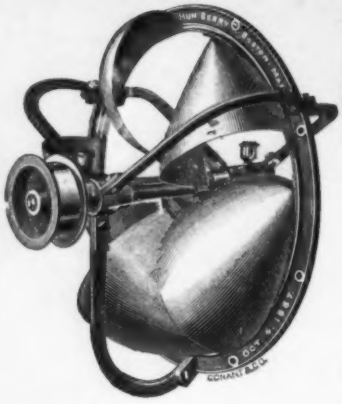
38 Wilhelmstrass, Berlin, Germany.
2 Kungsholmstorg, Stockholm, Sweden.



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